Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 SCA 11,0 o 1

1. Edition

En

PE 6 P 110 A 720 RS 3016 EP/RSV 350-1100 P 1/310 R

supersedes -

company Scania

engine DSJ 11

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC) -0,05 (+0,15)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,4 - 14,1	0,8			2,5±0,1** (max.2,2-2,9)
600	9	6,6 - 7,8				
	15	19,7 - 21,5				
200	9	4,1 - 5,3				

Adjust the fuel delivery from each outlet according to the values in [ ]

*

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.67	1100	16,0	without auxiliary spring	ca.31	350	6,0		
	1150	11,7			150	19 - 21		
	1200	6,0			350	5,7-6,3		
(2a)	1150	10,4-12,5	with auxiliary spring		400	3,2-4,7		max.
	1200	4,4- 7,8			550	0 - 1		
	1350	0,3- 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	161,0-163,0	1130-1140*	600	160,0-164,0	100	190-240		
					350	9 -13, dispersion max.2	**	
					1200	25 - 35 dispersion max.4		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

A2

5.76

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A2

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 MAN 20,9c

3. Edition En

Testoil-ISO 4113

PE 12 P 120 A 520 LS 836 RQV250-1150PA353R

supersedes 2.80

company MAN

engine D 2542 MLE 478,0 (650 PS)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7

0 - 45 -60 -105-120-165-180-225- 240-285 - 300-345° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3-11,4	18,5 - 18,8	0,5(0,9)			
250	6,7-6,9	2,2 - 2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.11	100	min.8,3	200	0,6-0,9
	1450	0 - 1,0					250	6,7-6,9	520	3,2-3,7
									830	5,7-6,0
									1150	8,1
ca.66	10,3	1190-1200					520-580	=2,0		
	4,0	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1150	185,0-188,0 (182,0-191,0)	1190-1200*			100	200,0-220,0		
					100-170	(80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 MAN 11,1 r 2
1. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 720 LS 388 RQV 250-1050 PA 567

6 - 2 - 4 - 1 - 5 - 3
0 -60 -120-180-240-300

supersedes -
company MAN
engine D 2566 MLE
220 kW (299 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,0	17,4 - 17,8	0,5(0,9)			
	+0,1					
250	6,1-6,3	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1050 1350	15,2-17,8 0 - 1,0				ca.11	100	min.7,5	250	1,1
							250	6,1-6,3	580	5,4-5,6
ca.63	10,0 4,0	1090-1100 1200-1230				(3a)	380-440	= 2,0	1100	8,4

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	174,0-178,0 (171,0-181,0)	1090-1100*			100	260,0-290,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.80

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A5

A5.

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 4

2. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 720 LS375 RQV 750 PA377R
Komb.-Nr. 0 402 046 181

supersedes 8.79
company: MAN
engine D 2566 MTE, 142 kW
Nr. 7009

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5-12,6	15,2 - 15,4	0,4(0,8)			
250	6,8-7,0	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
-	11,5	750-755	-	-	-	-	-	-	750	4,6
	4,0	755-785								
	900	0 - 1,0				③a				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
700	152,0-154,0 (149,5-156,5)	750-755*	-	-	100	215,0-235,0 (211,0-239,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 3

2. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 720 LS375 RQV 250-1100 PA276DR

Komb.-Nr. 0 402 046 193

supersedes 8.79

company: MAN-Nr. 7082

engine D 2566 MTE (220 kW -299 PS) tracteur

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1-13,2	15,9 - 16,1	0,4(0,8)			
250	7,3-7,5	1,1 - 1,7	0,4(0,7)			
500/700	- - -	C, 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.13	100	min.8,9	250	1,2-1,4
							250	7,3-7,5	600	3,8-4,2
							360-420	=2,0	1140	8,0
ca.50	12,1	1140-1150								
	4,0	1190-1220								
	1350	0 - 1,0				(3a)				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	159,0-161,0 (156,0-164,0)	1140-1150*	750	160,0-164,0 (157,0-167,0)	100	215,0-235,0	1100	13,1+0,1
							500	13,4+0,1
			500	164,0-168,0 (161,0-171,0)			750	13,3+0,1
					100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.83

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Test Specifications Fuel Injection Pumps and Governors

① WPP 091/4 MAN 20,9 a 1
1. Edition
En

Testoil-ISO 4113

PE 12 P 100 A 520/4 LS 834 RQV 250-750 PA 353 R

supersedes -
company MAN
engine D 2542 M6
185 kW (252 PS)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7
0 -45 -60 -105-120-165-180-225 -240 -285-300-345

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,1 - 3,2 (3,05 -3,25) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,2 +0,1	8,3 - 8,5	0,3(0,6)			
250	6,4-6,6	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	750 950	15,2-17,8 0 - 1,0				ca.12	100 250	min.8,0 6,4-6,6	250 400 600 750	1,1-1,2 2,5-2,8 4,1-4,6 6,3
ca.61	11,2 4,0	790-800 855-885				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
750	83,0 - 85,0 (81,0 - 87,0)	790-800*	-	-	100 250	19,5-21 mm 13,0-19,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 MB 19,1 1

1. Edition

En

PE 12 P 100 A 320 LS828 RQ 750 PA484R

supersedes -

company: Daimler-Benz

engine OM 404 (202kW-275 PS)

12 - 1 - 5 - 9- 8 - 3 - 4 - 11 - 10 - 2 - 6- 7 + 0,50
0 -45 -60 -105-120-165-180-225-240-285-300-345° (± 0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1-12,2	9,7 - 9,9	0,3(0,6)			
250	7,9-8,1	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.30	11,1 5,4	750-755 775-785				(3a)			750	4,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	97,0-99,0 (95,0-101,0)	750-755*			- 780	- - - dispersion max.4 (6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.79

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 16,0 d 1
1. Edition

En

PE 10 P 100 A 320 LS811 RQ 750 PA 374R

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 ± 0,50
0 -45 -72 -117-144-189-216-261-288-333° (± 0,75)

supersedes -
company Daimler-Benz
engine OM 403
(113kW - 153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6	9,3 - 9,5	0,3(0,6)			
	+0,1					
300	7,4-7,6	1,7 - 2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.20	10,6	750-755							750	3,8
	5,3	780-790				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	93,0 - 95,0 (91,0 - 97,0)	750-755*			100	110,0-130,0		
					785	5,2-5,4mmRW dispersion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.78

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 12,8 m
1. Edition
En

PE 8 P 100 A 320 LS 810 RQ 1050 PA 310

8 - 7 - 2 - 6 - 3- 5 - 4 - 1 je 45° ± 0,5° (0,75°)

supersedes -
company Daimler-Benz
engine OM 402
165 kW(224 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,1-0,1	10,3 - 10,5	0,3(0,6)			
300	7,1-7,3	1,0 - 1,6	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1010	19,2-21,8	1010	20,5	10,1 4,0	1055-1060 1095-1105						

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1055-1060 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1000	103,0- 105,0 (101,0- 107,0)				100	115,0-135,0 19,5- 21,0mmRW
**	high idle speed				1098	** 4,0-4,2 mmRW 124,0-144,0

Checking values in brackets

3.81

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PE 12 P 120/921 LS35 EP/RSUV 250-900 P10 V9055

supersedes –
company Henschel
engine 12 V 1516 (660 PS)

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12	18,8 - 19,4	0,8			
600	9	10,5 - 12,0				
	15	24,1 - 26,3				
200	9	8,1 - 9,3				

Cam sequence and angular cam spacing.
1-12-9-4-5-8-11-2-3-10-7-6-1 je 30°

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.25	900	16,0	without auxiliary spring	ca.25	250	8,0	880	0
	930	10,8			100	19 - 21	300	1,2-1,8
	950	6,0			250	7,7-8,3		
	930	9 - 12	with auxiliary spring		450	1,6-4,6		
(2a)	1000	2,4-4,4			620	0 - 1		
	1100	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
880	ca.260	910						
Full	load see HEN!							

Checking values in brackets

* 1 mm less control rod travel than col 2

2.80

A19

419

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 20,9 h
2. Edition
En

Testoil-ISO 4113

PE 12 P 120 A 520 LS843 RQ 750 PA477

supersedes 8.79
company MAN
engine D 2542 MLE
(Nr.7092-320kW-435PS)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7
0 -45 -60 -105-120-165-180-225 -240 -285-300-345°
+0,50 (+0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,3+0,1	17,6 - 18,0	0,5(0,9)			
250	3,9-4,1	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
-	9,3	750-755								
	4,4	770-780				(3a)				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
700	176,0-180,0 (173,0-183,0)	750-755*			100	19,5-21mmRW		
					775	4,4 mm RW dispersion max6(9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

A21

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4
1. Edition

En

PE 6 P 110 A 321 RS 263 RQ 175/1100 PA218R

Test equipment as per VDT-WPP 110/2 3. Edition

supersedes
company: Enasa
engine 9151

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	15,9 - 16,6	0,7			
600	9	8,3 - 9,5				
	15	22,0 - 23,7				
200	9	6,6 - 7,8				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
450	15,6-16,4	450	16,0	1110	15,6-16,0	390	0	100	6,1-8,1	-	-
				1140	7,6-13,8			150	4,8-7,0		
				1160	0 -10,4			200	3,1-5,2		
				1210	0 - 1			290	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
	ca. 10 mm RW - Carry out adjustment on engine					

Checking values in brackets

7.76

A24

A24

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
1. Edition

En

PE 6 P 120 A 420 LS 314 RQV 300-950 PA 112 KR,314 KR
300-875
PE 6 P 120 A 400 LS 315 - - -
PE 6 P 120 A 420 LS 316 RQV 300-1050 PA 298 KR,312KR
Testing with T nozzles and fuel lines 8 x 2 x 1000!

supersedes -
company: Allis Chalmers
engine. 25 000

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) + 0,15 - 0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	26,7 - 27,3	1,2			
600	6	7,4 - 8,6				
	15	32,8 - 35,3				
200	6	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV 300-950 PA T12 JR, 314 KR

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1050	15,0-18,0	-	-	-	ca.10	250	6,4-8,0	400	1,8-2,7
	1100	10,7-15,0					350	3,0-5,2	550	3,8-4,2
	1150	6,0-11,6					450	1,3-2,8	1000	7,5-7,9
	1210	0 - 7					550	0	1200-1290	end (11)
	1300	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
314 with 112 KR, 314 KR:								
950	208,0-210,0	990-1000*	750	195,5-198,5	100	120,0-160,0		
					300	19,0- 25,0		
					Change-over point 150-250 min⁻¹			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

B4

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B4

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.66	875 900 980 1060	15,0-17,6 12,0-15,4 3,2- 8,0 0		-	-	-		ca.10 (3a)	120 200 350 550	6,3-8,0 4,9-7,1 1,7-3,1 0		0-160 350 700 980-1050	Start 2,3-2,8 5,4-5,9 end (11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
875	164,0-166,0	915*	600	140,5-144,5	100 300 Change-over point 150-250 min^{-1}	120,0-160,0 19,0- 25,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

RQV 300-1050 PA 298 KR, 312 KR

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.66	1050 1100 1150 1210 1300	15,0-18,0 10,7-15,0 6,0-11,6 0 - 7 0		-	-	-		ca.10 (3a)	250 350 450 550	6,4-8,0 3,0-5,2 1,3-2,8 0		400 550 1000 1200-1290	1,8-2,7 3,8-4,2 7,5-7,9 end (11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1050	1,0 bar 256,0-258,0	1090-1100*	LDA 700 LDA 700	1,0 bar 238,0-244,0 0 bar 171,0-179,0	100 300 Change-over point 150-250 min^{-1}	120,0-160,0 19,0-25,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

316 with 298 KR, 312 KR

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
316 with 298 KR 312 KR	0,48	0,33	- 0,1 - 0,3 mm - 4,15 - 4,55 mm

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 19,1 b
2. Edition
En

PE 12 P A 320 LS812 RQ 750 PA248R(1) ..310R (3)
RQ 900 PA 310R (4)
RQ 1100PA248R(2) ..310R (5)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 (+0,5 -0,75)
0 -45 -60-105-120-165-180-225-240-285-300-345°

supersedes 1.74
company: Daimler-Benz
engine: OM 404
(1 - 230 PS)
(2 - 320 PS)
(3 - 242/265PS)
(4 - 288/317PS)
(5 - 336/370PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,5			
600	9	5,0 - 6,2				
	15	15,3 - 17,0				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ 750 PA248R (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
Control lever	24°			700 750 780 820 870	13 - 16 10,2 6,2-8,2 0,5-4,5 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
(1) 730 760- 785-	76,0 - 78,0 765: 1 mm RW less 795: 4,8 mm RW					
Increase by ± 2,0 cm³!						

Checking values in brackets

3.76

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation				Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
* Control lever 24°				1030 1100 1150 1240	13,8-16,4 9,6-10,5 4,5- 7,3 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
						Control rod travel
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / mm
1	2	3	4	5	6	7
(2) 1080 1100- 1145-	94,0 - 96,0 1110: 1mm RW ** 1160: 4,0 mm RW ***** dispersion ****	max. 6			100	*** 5 mm RW > column 2

Checking values in brackets

Testoil-ISO 4113

RQ 750 PA310R (3)

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation				Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
*	32°			690 710 750 790 850	14,4-18,7 12,6-15,4 8,6-10,0 1,6-5,2 0 - 1	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
						Control rod travel
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / mm
1	2	3	4	5	6	7
(3) 730 750- 780-	83,0 - 85,0 760: 1mm RW ** 795: 4,3 mm RW ***** **** Increase by ± 2,0 cm³!	less			100	***

Checking values in brackets

B8

En

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
* Control lever 36°				810 850 900 930 970	18,5-23,4 14,6-18,2 8,5-10,4 2,4- 6,2 0 - 1	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(4) 880 915- 940- ****	88,0 - 90,0 925: 1mm RW ** 955: 4,5 mm RW *** dispersion	less max. 6			100	5 mm RW ***** > column 2

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 1100 PA310R (5)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
*		33°		1020 1050 1100 1150 1190	16,0-20,3 13,4-16,9 8,4-10,3 0,4- 5,0 0 - 1	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(5) 1080 1125 1160- ****	102,0-104,0 1135: 1mm RW ** 1175: 4,0 mm RW *** Increase by ± 2,0 cm^3!				100	5 mm RW *****

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,1 a
4. Edition
En

PE 6 P 100/320 RS68 RQ 200/1100 PA24R
PE 6 P 100/320 RS94 RQV 200-1100 PA37R
..A.. EP/RSV ...-... P ../326R

supersedes 1.75
company: D A F
engine: DK 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 + 0,1 mm (from BDC) + 0,15 (- 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,4 - 12,9	0,5			
600	9	5,2 - 6,2				
	12	11,4 - 12,8				
	15	17,3 - 18,5				
200	9	3,4 - 4,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,6-16,4	500	16,0	1120	15,6-16,0	440	0	100	6,0-8,1	-	-
				1150	8,0-14,0			200	4,4-6,4		
				1180	0 - 9,0			300	0,4-2,4		
				1230	0 - 1			340	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
850	107,0-109,0 (105,0-111,0)				100	21 mm RW

./.

Checking values in brackets

2.77

B10

B10

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.66	1100	14,8-17,8						ca.10	100	6,3-8,0		1100	8,2
	1150	10,0-14,1							200	4,5-6,9			
	1200	4,0-10,2							300	3,4-3,8			
	1250	0 - 6							450	2,2-3,6			
	1310	0							700	2,2-3,6			
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
See page 2!		1120						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 200-1100 P1/326R

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	1100	16,0						ca.29	200	6,0		300	0
	1180	10,2		without auxiliary spring									
	1220	6,0							100	19 - 21			
									200	5,7-6,3			
	1200	5,6-9,6		with auxiliary spring					300	1,8-3,8		200	0,3-0,5
	1240	2,0-5,6							400	0 - 1			
	1310	0,3-1						(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
See page 2!		1120						

./.

Checking values in brackets

* 1 mm less control rod travel than col 2

The numbers denote the sequence of the tests

EP/RSV 200-900 P 7/326R DAF 11,1a

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (11)
ca.62	900	16,0	**	ca.25	200	6,0	300	0
	950	10,5			140	19 - 21		
	980	5,8			200	5,7-6,3		
	950	9,0-11,2			250	3,4-4,7	200	0,3-0,5
②a	980	4,0- 7,4			350	0 - 1		
	1050	0,3- 1						

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
	***	910						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 200-1200 P 4/326R

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (11)
ca.73	1200	16,0	** without auxiliary spring	ca.23	200	6,0	400	0
	1240	9,5			100	19 - 21		
	1270	4,0			200	5,7-6,3		
	1240	9,0-11,0	with auxiliary spring		300	1,8-3,8	250	1,2-1,8
②a	1280	2,0- 4,0			420	0		
	1350	0,3- 1						

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
***	In accordance	with special nameplate on pump! 1220						

Checking values in brackets

* 1 mm less control rod travel than col. 2

B12

B12

En

PE 8 P 110 A 221 LS 212, Z RQ 300/1300 PA 174 D
.. LS 212, Z RQV 250/1300 PA 222 D ./.
.. LS 212, Z RQV 250-1300 PA 259 D ./.

supersedes 1.74
company: S t e y r
engine: WD 815.60

LDA see STE 8,1 a

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,3 - 11,0	0,5			
600	9	3,8 - 4,8				
	15	14,2 - 15,7				
200	9	1,5 - 2,5				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1320	15,6-16,0	550	0	150	6,3-8,1	-	-
				1360	7,3-13,7			250	4,6-6,8		
				1400	0 - 8,5			350	1,9-4,3		
				1460	0			450	0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1330-1345

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
212	- 0,5 bar		0	bar		
1300	121,0-123,0		1300	108,0-111,0	100	13 - 15
	120,0-124,0			107,0-112,0		
212Z						
1300	132,0-134,0		1300	118,0-122,0	100	15 - 17
	131,0-135,0			117,0-123,0		

./.

Checking values in brackets

B13

B13

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.50	1320 1360 1450 1540	14,0-18,0 10,2-15,2 0 - 8,1 0		-	-	-	ca.13 (3a)	100 250 350 450	7,9-10,3 7,2- 9,7 2,0- 4,6 0	550 1320 1320 600	3,8-4,2 8,3 0 0,9-1,1

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
212 - 1300	LDA 0,5 bar 121,0-123,0	1330-1345*	LDA 1300	0 bar 108,0-111,0	100	12-13		
212Z 1300	132,0-134,0		1300	118,0-122,0	100	15-17		
					Change-over point		200-130	min^{-1}

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV ..259D

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.50	1340 1400 1460 1570	14,4-17,2 8,6-13,3 1,6- 9,0 0		-	-	-	ca.13 (3a)	200 300 400 510	9,1-11,0 6,5- 9,4 2,7-5,8 0	600 1340 1300 600	3,8-4,1 8,4 0 0,4-0,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
212 - 1300	LDA 0,5bar 121,0-123,0	1330-1345*	LDA 1300	0 bar 108,0-111,0	100	12 - 13		
212Z 1300	132,0-134,0		1300	118,0-122,0	100	15 - 17		
					Change-over point 200-130 min^{-1}			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
212 212Z + RQ-RQV	0,12 - 0,14	0,19 - 0,24	+ 0,1 + 0,9

Notes:

(1) when n = 1000 rev/min and gauge pressure = 0 bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
1. Edition
En

PE 8 P 120 A 920/4 LS 816 RQ 250/1200 PA 252

supersedes -
company: F i a t
engine: X 8/7

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC) (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	20,7 - 21,5				
	6	5,3 - 6,5				
	15	22,5 - 24,4				
200	6	0,6 - 1,6				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1210	15,6-16,0	540	0	150	6,9-8,1	-	-
				1250	6,0-12,6			250	4,0-7,2		
				1280	0 - 8,4			350	1,8-4,2		
				1340	0			440	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1200	150,0- 154,0	1200				

Checking values in brackets

4.75

C1

CA

Testoil-ISO 4113

PE 12 P 110 A 520 LS 835 RQ 750 PA 404 R

supersedes company: MAN engine: D 2542 MTE

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	16,1 - 16,3	0,4(0,8)			
250	5,5-5,6	2,1 - 2,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	11,3	750-755	-	-	-	-	-	-
				5,4	775-785						

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750 - 755 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
700	161,0 - 163,0 (158,0 - 166,0)	-	-	-	-	-

Checking values in brackets

5.81

C2

C2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4
1. Edition

En

PES 6 P 110 A 420 LS 3037 RSV 425-1100 P2/424DR
Kombi-Nr. 0 402 076 709
Values only apply to test nozzle-and-holder assembly 1 688 901 016 and fuel-injection test tubing 9 681 230 724

supersedes IHC
company DTI-817 C
engine 420 HP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,0-14,1	25,7 - 25,9	0,4			
425	5,4 - 5,6	3,3 - 3,8	0,6			

Adjust the fuel delivery from each outlet according to the values in ▭

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	1300 0,3-1,7			ca.21	425	5,5	1080	14,0-14,1
	X = 3,5				100	20,0-21,0	700	14,7-14,9
ca.43	1140-1150 = 13,0				425	5,4-5,6	500	14,7-14,9
(2a)	1195-1225 = 4,0				430-490	2,0		
	1300 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	1,1 bar	1140-1150*	LDA	1,00 bar		180-205		
1100	257-259,0 (255-261)		700	264,0-270,0 (263 -273)	100 425	33,5-38,5		
			LDA 800	0 bar 149,0-157,0 (148,0-158,0)	1195-1225	4 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
3037 with 424 DR	0,22 - 0,27	0,85 - 0,88	H = 29,4 mm

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 20,9 n
1. Edition
En

Testoil-ISO 4113

PE 12 P 120 A 520 LS 836 RQV 250-1050 PA 353

supersedes –
company: MAN
engine: D 2542 MLE

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7
0 -45 -60 -105-120-165-180-225 -240 -285-300-345

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	$10,7^{+0,1}$	17,0 - 17,4	0,5(0,9)			
250	6,5-6,7	2,2 - 2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1050 1300	15,2-17,8 0 - 1				ca.12	100 250	min. 8,1 6,5-6,7	250 400 1100	1,2-1,3 2,4-2,6 7,4
ca.59	9,7 4,0	1090-1100 1175-1205				295-410 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1050	170,0-174,0 (167,0-177,0)	1090-1100*			100 1100	200,0-220,0 4,0 mm RW dispersion max.6(9) 100-170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.80

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C11

CAN

Test Specifications Fuel Injection Pumps and Governors

② WPP 001/4 MAN 9,2 i
4. Edition
En

Testoil-ISO 4113

PES 5 A 95 D 410 LS 2543 Z RQ 250/1100 AB 1039 DL

supersedes 3.81
company: MAN
engine: D2565 M/MF/MFSV
137 kW (186 PS)

1 - 3 - 5 - 4 - 2
0 -72 -144-216-288° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Cyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,0 - 11,2	0,3(0,6)			
250	5,9-6,1	0,9 - 1,5	0,3(0,5)			
750/500	- - - -	C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm ± 0,1 12
600 15,6-16,4	600	16,0	10,0	1145-1160	250	6,0	100	min.7,5	1100	11,0
							250	5,9-6,1		
			4,0	1180-1210			355-395	= 2,0	790	11,6
1100 10,8-11,2							500	0 - 1		
1300 0 - 1									550	11,9

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
1100	110,0 - 112,0 (108,5 - 114,5)		750	106,5 - 109,5 (104,5 - 111,5)	100	150 - 160
			500	max. 109,5 (111,5)	250	6,0 mm RW

Checking values in brackets

3.82

② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 17,4 b
3. Edition

En

PE 10 P 100 A 320 LS 842 RQ 300/1150 PA 187-2R

supersedes 8.81
company: Daimler-Benz
engine: OM 403
259 kW (352 PS)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 -45 -72 -117-144-189-216-261-288-333 ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Testöl-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2 +0,1	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0	11,5 - 11,7	0,3(0,6)			
300	7,4-7,6	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,8-14,6	650	14,2	11,0	1195-1210	300	7,5	100	min.9,0	1150	12,0-12,1
1400	0 - 1			4,0	1235-1265			300	7,4-7,6	600	12,0-12,2
								410-	450=2,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes: / mm 7
1150	115,5 - 117,5 (113,5 - 119,5)		600	100,5 - 105,5 (98,5 - 107,5)	100	125,0-145,0

Checking values in brackets

11.81

C18

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4

1. Edition

En

PE 6 P 110 A 720 RS246 EP/RSV 250 - 900 P7/368R

supersedes -
company Steyr
engine WD 614.80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	8,1 - 9,1	0,4			
	9	3,2 - 4,2				
	15	13,7 -15,3				
200	9	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in ▭

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.60	900	16,0	sans ressort auxiliaire			ca.25	250	6,0	880	0
	950	9,7					100	19 - 21		
	980	4,0					250	5,7-6,3	290	1,2-1,8
	950	8,2-11,3	avec ressort auxiliaire				350	0,6-3,1		
(2a)	980	3,1- 7,1					450	0 - 1		
	1100	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
900	111,0-113,0	910						
	110,0-114,0							

Checking values in brackets

* 1 mm less control rod travel than col 2

C21

C21

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 39,8 a
1. Edition

En

(1) PE 6 P 120 A 300/3 LS 346
(2) PE 6 P 120 A 320 LS 347 RSUV 300-750 P 9 A 332/1 R
(3) PE 6 P 120 A 300 LS 387
1 - 5 - 3 - 4 - 2 - 6 (1) 1 - 6 - 2 - 4 - 3 - 5 (2u3)
0 -15 -120-135-240-255°±0,5°(±0,75°) 0 -15 -120-135-240-255°±0,5°(±0,75°)

supersedes MWM 33,2 d 1 v.10.78
company Südbremse
engine D/TD/TBD 602 v 12
TBD 602V12S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Kom.-Nr. 0 401 806 047(1)
0 401 876 225(2) u.
0 401 816 054(3)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15- 2,35) mm (from BDC) RW = 21 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	26,6-27,0	0,5(0,9)			
300	5,5-5,7	(26,3-27,3) 2,8- 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0+0,1
	x	5,25					100		450	13,0+0,1
ca.70 (2a)	12,0=	790 - 800					300	5,5-5,7	325	14,2+0,6
	4,0=	815 - 845					315-	375=2,0mm		
	980=	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump without (1), (3) and with Fitted Governor (2)

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps run in tandem (1) and (2); (1) and (3)					100	19,5.21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.82

C22

C22

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 11,8 a 1
2. Edition
En

PE 6 P 110 A 720 RS 15 RQ 250/1100 PA 111 DR

supersedes 3.81
company: Daimler-Benz
engine: OM 355
154 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	12,0+0,1	10,0 - 10,2	0,3(0,6)			
250	7,9-8,1	1,7 - 2,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,5-16,5	600	16,0	11,0 4,0	1135-1150 1210-1240	250	6,0	100 250 385-4	min.7,0 5,9-6,1 25=2,0	1090 700 450	12,0-12,1 12,3-12,4 12,6-12,7

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1135-1150 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1090	100,0 - 102,0 (98,0 - 104,0)		700 450	96,0 - 99,0 (94,0 -101,0) 90,0 - 94,0 (88,0 - 96,0)	100	150,0-170,0 bei min.18,0 mm RW

Checking values in brackets

3.82

C23

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 HEN 12,0 c
1. Edition
En

PE 6 P 100 A 821 LS 344 RQ 250/1075 PA 135 D

supersedes -
company: Daimler-Benz
engine: HHF 524

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 + 0,1 mm (from BDC) (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,6 - 11,2	0,5			
600	9	4,9 - 6,1				
	15	13,8 - 15,2				
200	9	3,2 - 4,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1090	15,6-16,0	560	0	150	6,5-8,1	-	-
				1150	7,0-12,5			230	4,8-7,0		
				1200	0 - 7,2			350	2,1-4,6		
				1270	0			460	0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1120-1135

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
1075	125,0 - 127,0	600	600	120,0 - 123,0	100	19 - 21
	123,0 - 129,0			118,0 - 125,0		

Checking values in brackets

12.75

PES 4 MW 55/320 RS 21
RW 375/2200 MW 27 0 420 081 017
See page 2!

supersedes 7.79
company Daimler-Benz
engine OM 616

1 - 3 - 4 - 2 = 0 - 90 -180-270 ± 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21,0mm Control rod travel

**

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,2+0,1	3,8 - 3,9	0,25(0,3)			
375	6,6-6,8	0,65-0,75	0,1(0,15)			
1600	Sect. C, col.4-5		0,25(0,3)			
2180	Sect. C, col.4-5		0,25(0,3)			

Set uniform delivery according to the values in ☐ — Checking values in brackets

B. Governor Settings

** without altitude-pressure compensator

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
30 ①	11,0	100-300	67±2 ⑦	12,4 +0,2	2180	⑫	100	20,5-21,5
②	6,6-6,8	375	⑧	11,5	2280-2300	⑬	1600	13,0-13,2
③	**	385	⑨	4,0	2670-2730	⑭	1000	13,2-13,3
④	-	-	⑩	0 - 1,0	2950			
⑤	2,0	650-700	⑪	-		⑥ Switching point	250-300	(230-320)

C. Settings for Fuel Injection Pump with Governor Mounted **

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	39,0-41,0 (38,0-42,0)	2280-2300* (2275-2305)	1600	39,0-41,0 (38,0-42,0)	100	min.57	6,0 ⑫a
			1000	38,5-39,5 (37,5-40,5)	375	6,5-7,5 (6,0-8,0)	1,0 (1,5) ⑮
					2550	14,5-20,5 (13,5-21,5)	2,5 (3,0) ⑯

Checking values in brackets

* less control rod travel than in Column 2

5.82

BOSCH Geschaftsbereich KH Kundendienst Kfz-Ausrustung

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed	Setting point	Control-rod travel reduction from full-load control-rod travel
1000 min^{-1}	840 mbar (630 mm Hg)	1.0 - 1.2 (0.95 - 1.25) mm
	Checking point	
1000 min^{-1}	907 mbar (680 mm Hg)	0.3 - 0.6 (0.35 - 0.65) mm

2. Pin projection = 16.65 $\pm$ 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at n = 800 min^{-1}.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

4. ++ At this engine speed exceed the control-rod travel by 0.4 + 0.1 mm. Idle delivery must not be affected.

5. Adjustment angle: Stop ... idle = 35°, idle ... full load = 39°.

6. Sensing lever adjustment: Set the sensing lever at n = 375 min^{-1} (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at n = 1000 min^{-1} by 0-1 - 0.3 (0.1 - 0.4 mm) mm.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}.
At p_u = 450 mbar (338 mm Hg) (vacuum) the control-rod must must quickly return to control-rod travel 0 mm.

D2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 f
9. Edition
En

PES 5 MW 55/320 RS 15
RW 375/2200 MW 19

1 - 2 - 4 - 5 - 3 = 0 - 72-144-216-288 ± 0,5° (0,75°)

See page 2!

supersedes 2.79
company Daimler-Benz
engine OM - 617 USA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,70-1,80 / 1,65-1,85) mm (from BDC) 21,0mm Control rod travel

**

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,1-13,2	3,75-3,85	0,25(0,20)			
375	6,6-6,8	0,65-0,75	0,10(0,15)			
1600/2180	Sect. C, col.4-5		0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

** without altitude-pressure compensator

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	7	Rotational speed rev/min 8	Control rod travel mm 9
30	① min.11	100-300	67±2 ⑦	12,4-12,6	2180	⑫	100	20,5-21,5
	② 6,6-6,8	375	⑧	11,5	2280-2300	⑬	1600	12,8-13,0
	③ **	385	⑨	4,0	2670-2730	⑭	1000	13,1-13,2
	④ -	-	⑩	0-1,0	2950		2180	12,4-12,6
	⑤ max. 2	650-700	⑪	-			Switching point	
						⑥	270-320(250-340)	

C. Settings for Fuel Injection Pump with Governor Mounted **

Full-load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery Idle		Difference	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	cm³/1000 strokes 8	
2180	39,0-42,0 (38,0-43,0)	2280-2300* (2275-2305)	1600	39,0-41,0 (38,0-42,0)	100	mind.56,0	6,0	⑫a
			1000	37,5-38,5 (36,5-39,5)	375	6,5-7,5 (6,0-8,0)	1,0 (1,5)	⑮
					2550	14,5-20,5 (13,5-21,5)	2,5 (3,0)	⑯

Checking values in brackets

* less control rod travel than in Column 2

7.79

D3

D3

1. Testing of sections A, B and C should be done without the ADA aneroid box. When this test has been completed the ADA aneroid box is connected.

Testing the governor with ADA-aneroid box (147)

Engine speed	Setting point	Control-rod travel reduction from full-load control-rod travel
1000 min^{-1}	840 mbar (630 mm Hg)	0.9 - 1.1 (0.85 - 1.15) mm
	Checking point	
1000 min^{-1}	913 mbar (685 mm Hg)	0.1 - 0.5 (0.05 - 0.55) mm

2. Pin projection = 16.65 $\pm$ 0.05 mm.

3. Adjusting the idle stage

Text replaces section 4.1 of the test instructions.

Set the control lever to 30°.

Operate the fuel-injection pump at n = 800 min^{-1}.

Screw the spring retainer (torque-control capsule) or the driver with a pin wrench KDEP 1064/1 or a 1/2" hexagon-socket-screw-key so far that a control-rod travel of 1.2 - 1.5 mm is attained.

Further test steps see Test Instructions VDT-W-420/300 En.

4. ++ At this engine speed exceed the control-rod travel by 0.4 $\pm$ 0.1 mm. Idle delivery must not be affected.

5. Adjustment angle: Stop ... idle = 35°, idle ... full load = 39°.

6. Sensing lever adjustment: Set the sensing lever at n = 375 min^{-1} (control lever in full-load position). At this speed the control-rod travel must exceed the full-load control-rod travel at n = 1000 min^{-1} by 0.2 - 0.5 (0.1 - 0.6) mm.

7. Check the pneumatic shut-off:

Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At p_u = 450 mbar (338 mm Hg) (vacuum) the control rod must quickly return to control-rod travel 0 mm.

D4

En

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 6,0 e
4. Edition
En

PES 6 MW 100/320 RS 5 0 413 206 001
RWV 300...1150 MW 4 0 420 093 011
Angular cam spacing see page 2!

supersedes 6.79
company Volvo
engine TD 60

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) 9,0-12,0 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	10,0+0,2	7,6-7,8	0,35(0,6)			
300	5,7-5,9	1,5-1,9	0,35(0,55)			
600	Sect. C	col.4-5	0,5 (0,7)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
20	①	min.8,5	100	74±4	⑦	-	-	⑫	100	20,5-21,5
	②	5,7-5,9	300		⑧	9,1	1200-1210	⑬	1000	10,0-10,2
	③	**	325		⑨	4,0	1320-1380	⑭	600	9,7-9,9
	④	-	-		⑩	0-1,0	1460			
	⑤	0-1,0	550	40+5	⑪	-	-	⑥	Switching point 100-230(80-250)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
1000	76,4-78,4 (74,4-80,4)	1200-1210* (1195-1215)	600	62,8-66,8 (60,8-68,8)	100	min.140		⑫a
					300	15,8-19,8 (13,3-22,3)	3,5 (5,5)	⑮
								⑯

Checking values in brackets

* less control rod travel than in Column 2

5.82

D5

1. Angular cam spacing:

   1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300° $\pm$ 0.5 (0.75°)

2. Idle stage

   4.0 + 0.25 mm

3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

4. Whilst stationary control-rod travel must be at least 0.1 mm. (Check after adjusting the locking speed)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 6,0 a
5. Edition
En

PES 6 MW 100/320 RS 5 — 0 413 206 001
RWV 300...1400 MW 4 — 0 420 093 002
1 - 5 - 3 - 6 - 2 - 4 = 0 -60-120-180-240-300 ± 0,5(0,75)

supersedes 7.79
company Volvo
engine TD 60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) 9,0-12,0 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	10,0+0,1	7,6 - 7,8	0,35(0,6)			
300	5,7-5,9	1,5 - 1,9	0,35(0,55)			
550	Sect. C, col.4-5		0,5 (0,7)			

Testoil-ISO 4113

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
20 (1)	8,5	100-200	82±4 (7)	9,7-9,9	1400	(12)	100	20,5-21,5
(2)	5,7-5,9	300	(8)	8,8	1440-1450	(13)	1000	10,0-10,1
(3)	**	325	(9)	4,0	1520-1560	(14)	700	9,5- 9,7
(4)	-	-	(10)	0 - 1,0	1670		550	9,4- 9,6
(5)	2,0	420-470	40+5 (11)	-	-	(6)	Switching point	100-230(80-240)

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F)		Full-load speed regulation (8a)	Variations in fuel delivery (17) (18)		Starting fuel delivery idle		
							Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes
1	2	3	4	5	6	7	8
1000	76,4-78,4 (74,4-80,4)	1440-1450 (1435-1455)	550	59,3-63,3 (57,3-65,3)	300	15,8-19,8	3,5 (12a) (15) (16)

Checking values in brackets

less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

1. Idle guide-sleeve travel = 4.25 ± 0.1 mm
2. Whilst stationary control-rod travel must be at least 21 mm.
3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

D8

(5)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 VOB 6,0 a
3. Edition

En

PES 6 MW 100/320 RS 13 — 0 413 206 003
RWV 300...1200 MW 16 — 0 420 093 008

supersedes 6.79
company Volvo-BM
engine D 60

1 - 5 - 3 - 6 - 2 - 4 = 0 -60-120-180-240-300 ± 0,5 (0,75)°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke: 2,0-2,1 (1,95-2,15) mm (from BDC) — Control rod travel: 9-12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
800	9,5+0,2	6,6 - 6,8	0,35(0,6)			
300	5,7-5,9	1,5 - 1,9	0,35(0,55)			

Set uniform delivery according to the values in ☐ — Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
20	(1)	min.8,5	100	72±4	(7)	9,0-9,2	1210	(12)	100	20,5-21,5
	(2)	5,7-5,9	300		(8)	8,6	1240-1250	(13)	800	9,5- 9,7
	(3)	**	325		(9)	4,0	1340-1380	(14)		
	(4)	-	-			1,0	1400-1460			
	(5)	0 - 1,0		40+5	(10) (11)			(6) Switching point	100-230(80-250)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
800	66,4-68,4 (64,4-70,4)	1240-1250* (1235-1255)			100	mind.134	(12a)
					300	15,8-19,8 (13,3-22,3)	3,5 (5,5) (15)
							(16)

Checking values in brackets — less control rod travel than in Column 2

5.82

D11

BOSCH
Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung

1. Idle stage

   4.0 + 0,25 mm

2. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 6,0 c
5. Edition
En

PES 6 MW 100/320 R 11 — 0 413 206 002
RWV 300...1400 MW 14 — 0 420 093 007

supersedes 6.79
company Volvo
engine D 60 A

Angular cam spacing see page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 (2,35-2,55) mm (from BDC) 9,0-12,0 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
800	8,4+0,2	4,8 - 5,0	0,35(0,6)			
300	5,7-5,9	1,5 - 1,9	0,35(0,55)			

Set uniform delivery according to the values in ☐. Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel:	Rotational speed rev/min 8	Control rod travel mm 9
20 (1)	min.8,5	100	75+4 (7)	8,4-8,6	800	(12)	100	20,5-21,5
(2)	5,7-5,9	300	(8)	7,5	1440-1450	(13)	-	-
(3)	**	325	(9)	4,0	1510-1550	(14)	-	-
(4)	-	-	(10)	0,1-1,0	1620			
(5)	0-1,0	570	40+5 (11)	-	-	(6)	Switching point 100-230(80-250)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
800	48,9-50,9 (46,9-52,9)	1440-1450* (1435-1455)			100	min. 125	(12a)
					300	15,8-19,8 (13,3-22,3)	3,5 (5,5) (15)
							(16)

Checking values in brackets

less control rod travel than in Column 2

5.82

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D13

D13

1. Angular cam spacing:

   1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300° ± 0.5 (0.75°)

2. Idle stage

   4.0 + 0.25 mm

3. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.

En
DAH

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 BOS 12,3 c 3
1. Edition
En

PE 6 P 120 A 821 LS 139 RQ 300/1050 PA 518

1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes -
company: MAN-BS
engine: D 3256 BTXUE
169 kW (230 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,1 10,9	18,5 - 18,9	0,5(0,9)			
300	6,6-6,8	2,0 - 2,6	0,8(1,2)			
500	- - -	C, col.4-5				

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
500	15,6-16,4	500	16,0	9,9	1095-1110	300	6,7	100	8,2	1050	10,9-11,0
				4,0	1135-1165			300	6,6-6,8	750	11,2-11,4
1350	0 - 1							390-430	=2,0	500	11,5-11,7

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA 1050	0,9 bar 185,0-189,0 (182,0-192,0)		LDA 500	0,9 bar 131,0-137,0 (128,0-140,0)	100	180,0-200,0
			LDA	0 bar 116,0-120,0 (113,0-123,0)		

Checking values in brackets

10.80

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

BÖS 12,3 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
139 with 518	0,9 bar		10,9 - 11,0
		0,29	11,3 - 11,4
		0,20	10,9 - 11,1
		0	10,6 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

D16

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 p
1. Edition

En

Testoil-ISO 4113

PE 12 P 110 A 520 LS 824 RQV 250-1150 PA 353 R

supersedes -
company: MAN
engine: D 2542 MTE

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,4+0,1	12,9 - 13,1	0,4(0,8)			
250	8,9-9,1	1,4 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1150 1385	15,2-17,8 0 - 1,0	-	-	-	ca.11	100 250	min.7,5 5,9-6,1	200 500 850	0,6-0,8 3,1-3,5 5,9-6,1
ca.66	12,4 4,0	1190-1200 1320-1350					470-530=2,0mm		1150	8,1

Torque control travel e = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	129,0-131,0 (126,0-134,0)	1190 - 1200	* -	-	100	95,0-125,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.81

D20

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Test Specifications Fuel Injection Pumps and Governors

1A

40

WPP 001/4 MB 11,4 c
1. Edition

En

PES 6 P 100 A 820 LS266 EP/RSV 350-1100 P 0/818R
*** Search for engine speed until 4.3 mm CRT attained and measure scatter!
** Position auxiliary idle spring at 1.5-2.0 mm CRT!

supersedes -
company Daimler-Benz
engine 162 kW (220PS) OM 407

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2 (2)	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	12,4	11,2 - 11,4	0,3(0,6)			
350	+0,1 6,1-6,3	1,2 - 1,8	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.28	350	6,2**	-	-
ca.51 (2a)	11,4 4,3 1300	1130-1140 1200-1230 0,3-1,7					100 350 420-	min. 19 6,1-6,3 450=2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	112,0-114,0 (110,0-116,0)	1130-1140*			100 ***	15,0-15,5 4,3 dispersion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col 2

12.77

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D21

DLA

Test Specifications Fuel Injection Pumps ② and Governors

PE 12 P 100 A 320 LS 828 RQ 1150 PA 310 R

supersedes -

company: Daimler-Benz

engine: OM 404
294kW(400PS)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7
0 -45 - 60-105-120-165-180-225-240-285-300-345° ± 0,5°
(± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,5+0,1	9,9 - 10,1	0,3(0,6)			
350	7,4-7,6	0,5 - 1,1	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,5 4,7	1155-1160 1200-1210	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1155-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1130	99,0 - 101,0 (97,0 - 103,0)	-	-	-	100 1205	16-17 mmRW high idle speed 4,6-4,8 mm RW 4,0(6,0)cm³/1000 dispersion

Checking values in brackets

4.81

D22

D22

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 r
1. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 720 LS 388 RQ 750 PA 556

6 - 2 - 4 - 1 - 5 - 3
0 -60 -120-180-240-300

supersedes -
company: MAN
engine: D 2566 MLE
180 kW (245 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5	20,9 - 21,3	0,5(0,9)			
	+0,1					
250	6,3-6,5	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
				11,5	750-755						
				4,0	775-785						
				0-1,0	900						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
700	209,0 - 213,0 (206,0 - 216,0)					

Checking values in brackets

12.80

D23

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

323

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8s
1. Edition

En

PES 6 P 120 A 820 LS 249 RQV 300-1000 PA 204/4
300- 975 PA 202/4, 226/4
300- 925 PA 204/4

supersedes -
company: Fiat
engine: 8217.12

Testing with T nozzles and fuel lines 8x2x1000 according

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	22,9 - 23,7	1,0			
600	9	11,1 - 12,6				
	15	29,8 - 32,4				
200	9	9,6 - 11,2				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

300-1000

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1040	14,8-17,6	-	-	-	ca.10	200	6,8-8,0	1040	8,3
	1100	10,8-14,6					300	3,4-5,8		
	1200	3,0- 9,0					400	1,1-2,2		
	1340	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	122,0-124,0 (119,0-127,0)	1040-1050*						

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

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E7

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	975 1250	15,2-17,8 0 - 1,0		-	-	-		ca.14	100 300	min.7,5 5,9-6,1		1035	8,4
ca.58	9,5 4,0	1015-1025 1115-1145								300-395=2,0		-	-
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
ca.10	5 mm RW	990			100 300	19,5-21 mmRW 22,0-28,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

300-925

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	925 1200	15,2-17,8 0 - 1,0		-	-	-		ca.14	100 300	min.7,5 5,9-6,1		960	8,3
ca.59	9,5 4,0	965-975 1035-1065								300-395=2,0			
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
ca.	10,5 mm RW	940			100 300	19,5-21 mmRW 22,0-28,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

E8

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 ALO 8,5c

1. Edition

En

PES 6 P 110 A 320 RS 317 RQV 375-1100 PA 247 KR

supersedes -

company: Allis Chalmers

engine: Typ: 11000

Test instructions for RQV ... K governors WPP 001/4-3rd supplement
-Testing with EFEP 182 ("S-nozzles)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	16,1 - 16,8	0,7			
600	9	8,4 - 9,6				
600	12	15,1 -16,6				
600	15	21,3 -23,2				
200	9	6,8 - 8,0				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca.66	1130	15,0-17,6	-	-	-	ca.20	300	9,6-12,7	300	0 - 1,4
	1200	9,0-13,5					400	4,8- 6,4	400	2,8-3,4
	1300	0 - 7					600	2,8- 4,1	800	5,0-5,4
	1390	0					850	0	1130	8,3
						③a			1300-1390	End (11)

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed rev/min ④a 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 1090	0,6 bar 138,0-140,0	1145-1155*	LDA 600	0,6 bar 151,0-157,0	100	80,0-120,0		
			LDA 600	0 bar 100,0-108,0	875	8,0- 18,0 118,0-128,0		
					Change-over point		200-300	U/min

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.75

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E13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure – in bar gauge pressure ALO 8,5 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
317 with 247 KR	0,12	0,41	2,1 - 2,2 0,2 - 0,4

Notes:

(1) when n = 600 rev/min and gauge pressure = 0,6 bar (= maximum full-load control rod travel)

E14

Testoil-ISO 4113

PE 8 MW 100/720 LS 1010
RQ 300/1150 MW 17
Komb.-Nr. 0 403 548 001

supersedes 5.82
company: KHD
engine: BF 8 L 413 F
212 kW (288 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,2+0,1	13,1 - 13,3	0,35(0,6)			
300	6,3-6,5	1,2-1,6	0,35(0,55)			
500	9,9-10,0		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	18,2-20,8	650	19,0	9,2	1195-1210	300	6,4	100	min.7,8	1150	10,2-10,5
Control lever = 46°				4,0	1240-1270			300	6,3-6,5	1050	11,2-11,4
1400	0,0-1,0							2,0	365-405	750	12,2-12,3

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 750	0,74 bar 131,0-133,0 (129,0-135,0)		LDA 500	0 bar 87,5-89,5 (85,5-91,5)	100	136,5-146,5 (133,5-149,5)
					300	12,5-16,5 (10,0-19,0)

Checking values in brackets

12.85

E19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
LS 1010 MW 17	0,16	0,50 0,74 0	10,3-10,5 11,8-11,9 12,2-12,3 9,9-10,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test electrically unlocked starting delivery with 24 V.

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 o
2. Edition

Testoil-ISO 4113

En

PES 6 P 110 A 720 LS295 RQ 250/1050 PA335DR (1)
LS345 RQ 250/1050 PA335DR (2)
LS345 RQV 250-1050 PA373DR (3)

supersedes 8.77
company: M A N
engine: D 2566MTF (1)
D 2566MTUH (2-3)
(275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1-2) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (3) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,3	15,0 - 15,2	0,4(0,8)	12,1	15,0 - 15,2	
	(+ 0,1)			(+ 0,1)		
250	6,9-7,1	0,7 - 1,3	0,4(0,7)	6,8-7,0	0,9 - 1,5	
700/500	-	C, col.4-5				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ..335DR (1-2)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,3	1095-1110	250	7,0	100	min.8,5	1050	12,3-12,4
1050	Breakaway	(Control lever ca.49°)		4,0	1155-1185			250	6,9-7,1	700	12,8-12,9
								365-395	=2,0	500	11,5-11,6
1300	0 - 1							500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar		LDA	0,7 bar		
1050	150,0 - 152,0		700	157,0 - 161,0	100	215 - 235
	(147,0 - 155,0)		LDA	0,2 bar	250	9 - 15
			500	123,0 - 127,0		
			LDA	0 bar		
(Col.4-5 inrease by ±		3 cm³)	500	111,0 - 113,0	100-170 (80-190)	

Checking values in brackets

./.

2.79

F3

F3

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1050 1400	15,2-17,8 0 - 1	-	-	-	ca.16	100 250 520-580 700	min.8,5 6,8-7,0 =2,0 0 - 1	250 1100	0,6-1,6 8,3
ca. 66	11,1 4,0	1090-1100 1280-1310				(3a)				

Torque control travel a = - mm see col. 10-11

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel + 0,1 (5) Control rod travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1050	0,7 bar 150,0-152,0 (147,0-155,0)	1090-1100*	LDA 700	0,7 bar 157,0-161,0	100	215 - 235	1050	12,1
			LDA 500	0,2 bar 123,0-127,0	250	11 - 17	850	12,4
							700	12,8
(Col.4-5 inrease by ± 3 cm^3)			LDA 500	0 bar 111,0-113,0	100-170 (80-190)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm
295 345 with 335DR	0,68		12,3 - 12,4
		0,32	12,3 - 12,4
		0,20	11,5 - 11,6
		0	10,9 - 11,0
345 with 373DR	0,68		12,8 - 12,9
		0,32	12,3 - 12,4
		0,18	11,3 - 11,5
		0	10,9 - 11,0

En

F4

F4

Test Specifications Fuel Injection Pumps (1A) and Governors

VDT-WPP 001/4
2. Edition
En

PE 6 P 130/721 RS 230 EP/RSUV 250-750 P 9/317
PE 8 P 130/921/4 RS 231 250-750 P 9/313
PE 12 P 130/921 RS 232 250-750 P 9/313

supersedes 8.72
company Henschel
engine 1516

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	28,7 - 29,4	1,2			
	6	12,4 - 13,9				
	15	35,0 - 37,5				
200	6	7,5 - 8,4				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings (basic adjustment-control lever 35°)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.54	750	16,0	without auxiliary spring	ca.20	250	7,0	730	0
	760	12,5			50	19 - 21		
	770	8,4			250	6,7-7,3	280	1,2-1,8
(2a)	770	6,0-10,2	with auxiliary spring		325	1,4-4,0		
	800	3,2- 4,2			380	0 - 1		
	880	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(ca.	10 mm RW)							
Full	load see HEN!							

./.

Checking values in brackets

* 1 mm less control rod travel than col 2

F7

F7

Cam sequence and angular cam spacing.

1 - 5 - 3 - 6 - 2 - 4 je 60° (230)

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6 (231)

0 - 30 -90 -120 - 180 - 210 - 270 - 300°

1 - 12 - 9 - 4 - 5 - 8 - 11 - 2 - 3 - 10 - 7 - 6 je 30° (232)

Testing with T nozzles and fuel lines 8x2x1000 according

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 Li
1. Edition

En

PE 8 P 120 A 920/5 LS 3804 Z RQV 300-1050 PA 552

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2

45° ± 0,5° (0,75°)

supersedes -
company: Fiat
engine: 8285, 22, 002
242,7 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,1+0,1	20,7-21,1	0,5(0,9)			
300	5,9-6,1	2,8- 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1050 1350	15,2-17,8 0 - 1,0				ca.11	300 100	6,0 min.7,5	300 410	1,6-1,7 3,1-3,7
ca.64	10,1 4,0	1090-1100 1180-1210				310-410 (3a)			1100	8,6-8,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 207,0-211,0 (204,0-214,0)	1090-1100*			100	215,0-245,0		
LDA 1050	0 bar 149,0-153,0 (146,0-156,0)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

F11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

FIA 13.8 1 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
..3804 Z with .. 552	0,7		11,1 - 11,2
		0,29	10,2 - 10,3
		0,25	9,0 - 9,3
		0	8,5 - 8,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

F12

Testoil-ISO 4113

En

F12

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 16,0 b 1
1. Edition

En

PE 10 P 100 A 320 LS 817 520/5 RQV 350-1250 PA256D
PE 10 P 100 A 320 LS806 RQ 750 PA 214 ./.

supersedes 16,0b (5.74)
company: Daimler-Benz
engine: OM 403

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,1 - 8,8	0,4	12	6,9 - 7,3	
600	9	2,7 - 3,7				
600	12	6,3 - 7,5				
600	15	10,9 -12,4		Pe 806	with governor	214
200	9	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

350 - 1250

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1280	14,4-17,6	-	-	-	ca.14	200	8,5-9,8	1280	8,3
	1320	8,4-13,3					350	5,0-7,0		
	1380	0 - 6,6					500	2,8-4,5		
	1440	0					610	0		
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	93,0-95,0	1290-1310	1360-1370:5mmRW dispersion max.6		100	11,0-13,0		
					Change-over point 300-230 U/min			

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.76

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G5

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
Control lever deflection approx. 32				650 700 750 820	20,0-21,0 16,0-19,5 9,8-11,6 0						

Move control lever forwards until with pump stopped 21 mm control-rod travel is attained (CL approx. 32°), then set initial tension of spring.

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
730	69,0 - 71,0				100	11,0 - 13,0
750 - 760: 1 mm RW less						
765 - 780: 5,7 mm RW dispersion max.			6			

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

G6

En

G6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 e
1. Edition

En

PE 12 P 110 A 320 LS832 RQV 350-1150 PA 389R

supersedes -

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,5
0 -45 -60 -105-120-165-180-225-240-285-300-345 (0,75)
** Set lower delivery at inner lever!

company: Daimler-Benz
engine: OM 404 A
(525 PS) 386 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,4	14,0 - 14,2	0,4(0,8)			
	(+0,1)					
350	7,0-7,2	1,6 - 2,2	0,4(0,7)			
500/1130**	- - -	C, col.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.67	1150 1400	15,2-17,8 0 - 1	-	-	-	ca.18	100 350	min.8,6 7,0-7,2	300 1170	0,3-1,3 8,3
ca.66	12,4 6,8	1185-1195 1245-1275				(3a)	690-750 = 2,0 900 0 - 1			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195*	LDA 500	0 bar 103,0-107,0 (100,0-110,0)	100	110,0-130,0		
		**	1130	100,0-102,0 97,0-105,0)	1260	6,7-6,9mmRW dispersion max. 6 (9) 100-270 (90-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.77

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

G7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 19,1 e

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1) .
832 with 389R	0,68		13,4 - 13,5
		0,48	13,0 - 13,1
		0,33	12,0 - 12,2
		0	11,7 - 11,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 f
1. Edition

En

Testoil-ISO 4113

PE 12 P 110 A 520 LS824 RQ 900 PA404R (1)
RZU 750 P 1/15R (2)

supersedes
company: M A N
engine: D2542 MTE

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 (1-Nr.7003-287kW-390PS)
0 -45 -60 -105-120-165-180-225 -240 -285-300-345° (2-Nr.7003- -)
+0,50 (+0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cyl.12

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery m.404R (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery m.1/15R (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,0-13,1	13,0 - 13,2	0,4(0,8)	4,7-14,8	16,3 - 16,6	n = 700
250	7,4-7,6	1,1 - 1,7	0,4(0,7)	8,9-9,1	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

404R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
	12,0 6,7	900-905 927-936				(3a)				

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
850	130,0-132,0 (127,0-135,0)	900-905*			100 931	95,0-125,0 6,7 mm RW dispersion max4(9)		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.79

G9

5 69

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
	13,7 6,5	750 772-780						(3a)					

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	163,5-165,5 (160,5-168,5)	750*			100	19,5-21mmRW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FIA 13,8 r
2. Edition
En

PE 8 P 120 A 920/5 LS 3804 RQ 250/1200 PA 474 R

supersedes 2.81
company: FIAT
engine: 8280.22.002
331 kW (450 PS)

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45° ± 0,5°(± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,6+0,2	24,3 - 24,7	0,5(0,9)			
300	4,9-5,1	1,9 - 2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	10,6	1245-1260	300	5,0	100	min.6,5	1200	11,6+0,1
				4,0	1280-1310			300	4,9-5,1	650	11,6+0,2
(Control lever ca. 46°)				1400	0 - 1,0			355-	395=2,0mm		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1245-1260 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA	0,7 bar	-	LDA	0 bar	100	210,0-240,0
1200	243,0 - 247,0 (240,0 - 250,0)		1200	160,0-164,0 (157,0-167,0)		

Checking values in brackets

1.82

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 r

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE8P..LS3804 with..PA474R		0,7	11,6 - 11,7
		0	8,5 - 8,6
	0,44		10,8 - 10,9
		0,35	9,2 - 9,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 9,6 c
2. Edition

En

PE 6 P 100 A 320 LS 825 RQ 300/1150 PA187R
RQV300-1150 PA227R

supersedes 8.77
company: Daimler-Benz
engine: OM 401
(144kW - 196PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0	10,2 - 10,4	0,3(0,6)			
	(+0,1)					
300	8,4-8,6	1,3 - 1,9	0,3(0,5)			
600	- - -	C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQ.. 187R

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	11,0	1195-1210	300	8,5	100	min.10	-	-
				4,0	1250-1260			300	8,4-8,6		
1170	13,8-14,6							430-470	=2,0		
1400	0 - 1,5							600	0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
1150	102,0 - 104,0 (100,0 - 106,0)	500	600	88,0 - 93,0 (86,0 - 95,0)	100	110,0 - 130,0

Checking values in brackets

./.

9.78

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1150 1450	15,2-17,8 0 - 1	-	-	-	ca.12	100 300 400 700	min.10 8,4-8,6 2 - 4 0 - 1	300 800 1250	0,4-1,5 4,4-4,8 8,3
ca.64	11,0 4,0	1190-1200 1270-1300				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	102,0-104,0 (100,0-106,0)	1190 - 1200*			100	110,0-130,0 100-220 (90-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

G22

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
3. Edition
En

PES 6 P 120 A 420 RS 238 RQ 300/1100 PA 193 DR
RQV250-1100 PA 194 DR**
Testing with T nozzles and fuel lines 8 x 2 x 1000!
1 - 4 - 2 - 6 - 3 - 5 je 60°

supersedes 1.73, 2.74
company: Saurer
engine: D 2 KT (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) Cyl.1 (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	24,9 - 25,6	1,0			
600	6	5,9 - 7,1				
	12	20,8 - 22,6				
	15	30,6 - 33,0				
200	6	3,7 - 4,7				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ ... PA 193 D

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point ④		Test specifications		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,7-16,3	650	16,0	1120	14,6-15,0	610	0	100	7,1-8,1	750	15,8-16,0
				1160	8,0-13,6			250	5,3-7,4		
				1200	0 - 8,8			350	3,2-5,4		
				1270	0			510	0	1050	14,8-15,1

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA	0,7 bar		LDA	0,7 bar	100	22,0-24,0
1100	206,0-208,0		700	178,0-182,0		
	0 bar = 2,0 + 0,1 mm RW less				Change-over point 200-130 U/min	

./.

Checking values in brackets

10.75

H3

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1100 1150 1200 1280 1360	15,0-18,0 11,0-15,0 6,6-11,8 0 - 6,2 0					ca.12 (3a)	180 250 350 490	6,4-8,0 3,7-6,1 1,9-3,3 0	1100	8,2

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 206,0-208,0 0 bar=2,0 +	LDA 0,7 bar 1130 0,1 mmRW less	LDA 700	0,7 bar 178,0-182,0	100 Change-over point 200-130 U/min	22,0 - 24,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
3. Edition
En

PE 8 P 110 A 920/5 LS 822

RQ 250/1200 PA 290 R
RQV 250-1200 PA 299 R*
RQV 250-1200 PA 328 R

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 - je 45°

supersedes 11.75
company: F i a t
engine: 8280.01.000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) $\binom{+0,15}{-0,05}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,4 - 9,1	0,4			
600	9	2,4 - 3,4				
	15	11,9 - 13,4				
200	9	0,2 - 0,9				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ .. 290 R

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,7-16,3	650	16,0	1220	15,6-16,0	590	0	200	6,8-8,1	-	-
				1250	10,0-14,6			300	4,7-6,9		
				1290	0 - 9,3			400	1,6-3,9		
				1350	0			490	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
1200	119,0 - 121,0	1200			100 (starting	max. RW solenoid 24 V)

Checking values in brackets

12.77

H5

B. Governor Settings

RQV .. 299 R

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1225 1300 1400 1540	15,0-17,2 9,6-13,8 2,1- 8,6 0		-	-	-	ca.10 (3a)	100 250 400 570	6,8-8,0 5,1-6,8 2,2-3,7 0	200 600 1220	0,2-1,1 4,0-4,4 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	119,0-121,0	1220			100 **	max. RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

RQV .. 328 R

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1225 1300 1400 1540	15,0-17,2 9,6-13,8 2,1- 8,6 0		-	-	-	ca.10 (3a)	100 250 400 570	6,8-8,0 5,1-6,8 2,2-3,7	200 600 1220	0,2-1,1 4,0-4,4 8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	119,0-121,0	1220			100 **	max. RW (starting solenoid 24 V)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

H6

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MB 12,8 d
2. Edition

En

PE 8 P 100 A 320 LS 810 RQ 750 PA248R (1)
RQ 1100 PA248R (2)

supersedes -
company: Daimler-Benz
engine: OM 402
(1 - 148/163 PS)
(2 - 200/220 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 + 0,1 mm (from BDC) Cyl. 8 $(^{+0,15}_{-0,05})$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4	600 9	5,4 - 6,1	
200	9	3,5 - 4,5		200 9	3,5 - 4,5	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

RQ 750 PA248 (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
Control lever ca. 24° Sleeve position 36,0 mm				700 750 780 820 870	13 - 16 10,2 6,2-8,2 0,5-4,5 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes: 7
(1) 730 760-770: 1 mm RW weniger 785-800: 5,3 mm RW (increase by ± 2,0 cm³!)	78,0 - 80,0 dispersion max. 6				100	ca.12

Checking values in brackets

4.76

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation			⑤	Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
Control lever ca. 24° Sleeve position 36,0 mm				1050 1100 1150 1240	14,0-16,0 10,1 4,5-7,3 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(2) 1080	85,0 - 87,0 1110-1120:1 mm RW less 1160-1175:4,8 mm RW dispersion max. 6 cm^3					

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation			⑤	Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

H12

En

11/12

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 9,6 e
2. Edition
En

PE 6 P 110 A 320 LS 829 RQ 300/1150 PA 387 DR

6 - 3 - 5 - 2 -4 - 1
0 -45 -120-165-240-285°

supersedes 3.78
company: Daimler-Benz
engine: OM 401 A
110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1150	13,6	14,6 - 14,8	0,4(0,8)			
300	+ 0,1 7,9-8,1	1,6 - 2,2	0,3(0,7)			
600/500	- - -	C, col.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	12,8	1195-1210	300	8,0	100	min.9,5		+0,1
				4,0	1260-1290			300	7,9-8,1	1150	13,6
								460-500	= 2,0	600	13,7
1150 1400	Breakaway 0 - 1	(Control lever ca.49°)									

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA 1150	0,7 bar 146,0-148,0 (143,0-151,0)		LDA 600	0,7 bar 140,0-145,0 (137,0-148,0)	100	110,0-130,0
					1280	4,1-4,3 mmRW
			LDA 500	0 bar 114,0-116,0 (111,0-119,0)	dispersion max. 6 (9)	
					Change-over point 100-220 (80-240)	

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Checking values in brackets

4.80

H15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure MB 9,6 e

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
829 with 387 DR	0,7	0,480 0,385 0	13,6 - 13,7 13,1 - 13,2 12,4 - 12,6 12,1 - 12,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,4d
2. Edition

En

PES 6 P 100 A 820 LS351 EP/RSV 350-1100 P 0/818R (1)
.. LS351 350-750 P 1/819 R (2)
.. LS351 350-900 P 1/819 R (3)

supersedes 7.78
company Daimler-Benz
engine OM 407 (1 - 177 kW - 241PS
(2 - 136 kW - 185PS

** Set idle-speed auxiliary spring at 1,5-2,0 mm control-rod travel.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2 - 3) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1080	13,5	12,1 - 12,3	0,3(0,6)	14,0	12,3 - 12,5	n = 700
	+ 0,1			+0,1		
350	8,5-8,7	1,2 - 1,8	0,3(0,5)	8,5-8,7	1,2 - 1,8	

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.29	350	7,2		**
	x=	4,7					200	min.19		
ca.52							350	7,1-7,3		
	1130-1140=	12,5					510-570	= 2,0		
(2a)	1200-1230=	5,8					650	0 - 1		
	1350=	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1)								
1080	121,0-123,0	1130-1140*			100	135,0-155,0		
	(119,0-125,0)				350	7,1-7,3mmRW		
					1215	5,7-5,9		
					dispersion	max.4(6)	mmRW	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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10.78

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H23

1123

The numbers denote the sequence of the tests

(2)

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.23	350	7,3		**
	x =	4,5					200	min.19		
ca.37	750-755=13,0						350	7,2-7,4		
	780-790= 6,0						390- 410=2,0			
(2a)	850=0,3- 1,7						450	0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(2)					100	135,0-155,0		
700	123,0-125,0	750-755*			350	7,2-7,4mmRW		
	(121,0-127,0)				785	5,9-6,1		
					dispersion max.4 (6)	mmRW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

(3)

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.23	350	7,3		
	x=	4,5					200	min. 19		
ca.40	905- 910 =13,0						350	7,2-7,4		
	935- 945 = 6,0						390-410= 2,0			
(2a)	1000= 0,3- 1,7						450	0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(3)					100	135,0-155,0		
850	125,0-127,0	905-910*			350	7,2-7,4mmRW		
	(123,0-129,0)				940	5,9-6,1mmRW		
	-14,0-14,1mmRW				dispersion	max.4 (6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

H24

H24

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 t
2. Edition

En

PE 6 P 110 A 720 RS 3065 RSV 350-1100 P1/462R (1)
PE 6 P 110 A 720 RS 3066 RSV 350-1100 P1/462R (2)

supersedes 8.79
company Scania
engine D 11 (1)
DS11 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,30-3,40 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,3-12,4	13,5-13,7	0,4(0,8)	13,2-13,3	16,1-16,3	2,5+0,1** (max.2,2-2,9)
350**	5,8-6,0	0,6- 1,0	0,2(0,4)	6,4-6,6	0,8- 1,2	
600	- - -	C, col.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) with 3065

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.31	350	5,4		
	x	4,0					100	min.20		
ca.68 (2a)	1140-1150= 11,3 1210-1240= 4,0 1400 =0,3-1,7						350 540-600	5,8-6,0 = 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1100	135,0-137,0 (132,0-140,0)	1140-1150*	600	134,5-137,5 (131,5-140,5)	100	190-240		
					350	8 - 12**		
					1200	dispersion max.4(7)		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.80

J3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J3

The numbers denote the sequence of the tests

SCA 11,0t
(2) with 3066

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.27	350	6,0		
	x	= 4,0					100	min.20		
ca.62	1140-1150=12,3						350	6,4-6,6		
(2a)	1205-1235= 4,0						520-580	= 2,0		
	1350	= 0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
(2)								
1100	161,0-163,0	1140-1150*	600	162,5 - 165,5	100	190-240		
	(158,0-166,0)			159,5 - 168,5)	150	10 - 14**		
					1200	dispersion max.4(7)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

J4

En

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 19,1 d
2. Edition

En

PE 12 P 110 A 320 LS 830 RQ 750 PA374R (1)
..LS830,Z RQ 900 PA310R (2-3)

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,50
0 - 45-60-105-120-165-180-225-240-285-300-345° (0,75)

supersedes 10.77
company: Daimler-Benz
engine: OM 404 (A)
(1 - 358 PS)
(2 - 330 PS)
(3 - 368kW - 500PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cyl.12

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2-3) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6	13,7 - 13,9	0,4(0,8)	13,2	14,1 - 14,3	n = 850 (2)
	+ 0,1			+0,1		
300	8,0-8,2	1,1 - 1,7	0,4(0,7)	14,1 8,0-8,2	15,8 - 16,0 1,1 - 1,7	n = 850 (3)

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ 750 (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.28	12,6 6,0 0,1	750-755 780-790 850	-	-	-	- (3a)	-	-	750	3,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) 700	137,0-13,0 (138,0-146,0)	750-755*			100 785	110,0-130,0 5,9-6,1 dispersion max.6 (9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.78

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.34	12,2 6,0 0-1	905-910 940-950 1050		-	-	-	- (3a)	-	-	900	5,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 850	141,0-143,0 (138,0-146,0)	905-910*			100 945	110,0-130,0 5,9-6,1 dispersion max.6 (9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

RQ 900 (3)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.34	13,1 5,9 1050	905-910 940-950 0 - 1					(3a)			900	5,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(3) 850	158,0-160,0 (155,0-163,0)	905-910*			945	5,8-6,0 dispersion max.6(9)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1f1
3. Edition

En

PE 12 P 100 A 320 LS 820 "Z" RQ 900 PA 310 R

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 -2 - 6 -7 ± 0,50
0 - 45- 60-105-120-165-180-225-240-285-300-345 (0,75)

supersedes MB 19,1 f-8.79
company: Daimler-Benz
engine: OM 404
242 kW (329 PS) "Z"

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) Cyl.12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,3-11,4	8,9 - 9,1	0,3(0,6)	12,3-12,4	10,0-10,2	n 850
250	7,9-8,1	1,2 - 1,8	0,4(0,5)	8,6-8,8	1,2- 1,8	250

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

without Z

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.27	10,3 4,9 1000	905-910 940-950 0 - 1				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
880	89,0-91,0 (87,0-93,0)	905-910*			100 100 945	16,5-17,0 (80) 4,8-5,0mmRW dispersion max.6(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.80

J11

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
	11,3 5,0 1100	905-910 945-955 Û -					(3a)			900	5,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	100,0-102,0 (98,0-104,0)	905-910*			100 950	90,0-110,0 4,9-5,1mmRW dispersion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 h
1. Edition

En

PE 8 P 100 A 320 LS810 RQ 1150 PA407R (1)
PE 10P 100 A 320 LS811 RQ 1150 PA407R (2)
8 - 7 - 2 - 6 - 3 - 5 - 4 - 1
0 -45 -90-135-180-225-270-315° Cyl.8
10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
0 -45 -72-117-144-189-216-261-288-333°

supersedes -
company: Daimler-Benz
engine: OM 402/OM 403
(1 - 175kW -238PS-12,8)
(2 - 217kW -295PS-16,0)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,2	10,6-10,8	0,3(0,6)	10,9	10,4-10,6	
	+0,1			+0,1		
300	7,4-7,6	1,7- 2,3	0,3(0,5)	7,4-7,6	1,7 -2,3	

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

407 with 810 (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
	10,2 4,0 1300	1155-1160 1105-1205 0 - 1				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	106,0-108,0 (104,0-110,0)	1155-1160*			100	110,0-130,0		
					1200	3,9 - 4,1mm RW dispersion max.4(6)		

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.78

J13

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

J13

B. Governor Settings

407 R with 811 (2)

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
	9,9 3,8 1300	1155-1160 1195-1205 0 - 1					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	104,0-106,0 (102,0-108,0)	1155-1160*			100 1200	110,0-130,0 3,7-3,9 mmRW dispersion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

J14

J14 En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 b
2. Edition
En

Testoil·ISO 4113

PE 12 P 110 A 520/4 LS 824 RQV 250-1150 PA 353 R
PE 12 P 110 A 520/4 LS 835 RQ 750 PA 404 R
12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 + 0,50
0 -45 -60 -105-120-165-180-225 -240 -285-300-345° (± 0,75)

supersedes 11.77
company: MAN
engine: D 2542 MTE

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cyl.12

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "824" cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery "835" cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,4	12,9 - 13,1	0,4 (0,8	12,3	16,1 - 16,3	n = 700
	(+0,1)			(+0,1)		
250	8,9-9,1	- 1,4 - 2,2	0,4 (0,7)		2,1 - 2,7	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

RQV .. 353

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca. 68	1150	15,2-17,8	-	-	-	ca. 11	100	min.7,5	200	0,2-1,3
	1480	0 - 1					250	5,9-6,1	800	5,4-5,8
							470-530	=2,0	1170	8,3
ca. 66	12,4	1190-1200					630	0	-	-
	4,0	1320-1350								
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1150	129,0-131,0 (126,0-134,0)	1190-1200*			100	95,0-125,0		
					100-170 (80-190)			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.78

J17

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.
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J17

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca. 25	11,3 5,4 900	750-755 755-785 0 - 1						(3a)				750	4,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	161,0-163,0 (158,0-166,0)	750-755*			100 780	19,5 - 21 5,3 - 5,5 dispersion max.6(9		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 BOS 12,3i
1. Edition
En

PE 6 P 120 A 721 RS 217 RQ 250/1100 PA 311 DR (V1258o D)

supersedes -
company: Büssing
engine: S 12

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) + 0,15-0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	19,6 - 20,4	0,8			
600	6	9,6 - 11,0				
	15	21,3 - 23,2				
200	9	5,0 - 6,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	1120	13,8-14,2	510	0	100	6,6-8,1	800	15,8-16,0
				1150	6,0-12,0			200	5,1-7,2	1050	14,4-14,7
				1180	0 - 8,1			300	2,3-4,5		
				1240	0			410	0		

Torque-control travel on flyweight assembly dimension a = 0,65 mm

Speed regulation: At 1140-1155 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes: mm 7
LDA	0,7 bar		LDA	0,7 bar		
1100	220,0-224,0		800	215,0-221,0	100	16 mm RW
	218,0-226,0			213,0-223,0		
	216,0-228,0		LDA	0 bar		
			500	113,0-119,0		
				111,0-121,0		

./.

Checking values in brackets

10.75

J21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
217 with 311 DR	0,56		- 0,2 - 0,3 mm
		0,26	- 2,8 - 3,2 mm

Notes:
(1) when n = 1100 rev/min and gauge pressure = 0,7 bar (= maximum full-load control rod travel)

Testoil-ISO 4113

J22

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 BOS 12,3 c 1
1. Edition
En

PE 6 P 120 A 821 LS 139 RQ 250/1100 PA 192 DR
RQV300-1100 PA 258 DR

supersedes -
company: Büssing
engine: U 12 DA 63

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	20,7 - 21,1	0,4			
600	9	10,2 - 11,7				
	15	23,4 - 25,3				
200	9	6,0 - 7,2				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ.. 192 DR

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1120	14,4-14,8	490	0	160	6,6-8,1	700	15,8-16,0
				1160	6,8-12,5			220	5,2-7,3	900	15,3-15,6
				1200	0 - 7,2			300	2,4-4,7	1100	14,4-14,9
				1250	0			390	0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1100	0,7 bar 238,0-240,0		LDA 700	0,7 bar 200,0-204,0	100	1 mm control-rod travel more than full load
LDA 1100	0 bar 201,0-207,0		500	198,0-204,0		
(increase by ± 2,0 cm³!)						./.

Checking values in brackets

K7

B. Governor Settings

RQV .. 258 DR

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.50	1140 1180 1220 1280	14,4-17,4 8,0-13,0 0 - 8,4 0		-	-	-		ca.13 (3a)	100 200 300 410	7,6-10,3 5,7- 8,6 2,5- 5,4 0		200 500 900 1140 1100 500	0,6-1,2 3,4-3,7 5,6-6,0 8,3 0 0,4-0,5

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100 LDA 1100	0,7 bar 238,0-240,0 236,0-242,0 0 bar 201,0-207,0 199,0-209,0	1140-1150*	LDA 700 500	0,7 bar 200,0-204,0 198,0-206,0 198,0-204,0 196,0-206,0	100	1 mm CRT more than full load Change-over point 200-130 min^{-1}		

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure 1) 2)

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference 3) 4) mm
139 with 192D (2) Increasing pressure	0,26 - 0,29		Difference (4) ca. 2,3 mm
139 with 258D (1) Decreasing pressure	0,46 - 0,49	0,20 - 0,24	Reduction (3) - 0.1 mm Reduction (3) - 2.1 mm

En

500 0,7

K8

PE 10 P 100 A 320 LS 827 RQ 300/1150 PA187R (1)
LS 811 RQ 300/1150 PA187R (2)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 + 0,50
0 -45 -72-117-144-189-216-261-288-333° (±0,75)

supersedes 8.77
company: Daimler-Benz
engine: OM 403
(352 PS - 1)
(304 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) 3,40-3,50 (3,35-3,55) = 811 Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3	10,9 - 11,1	0,3(0,6)	10,2	9,4 - 9,6	
	(+0,1)			(+0,1)		
300	8,4-8,6	1,3 - 1,9	0,3(0,5)	7,4-7,6	1,7 - 2,3	
600	- - -	C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

187R with 827 (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,2	11,3	1195-1205	300	8,5	100	min.10	-	-
				4,0	1240-1280			300	8,4-8,6		
1170	13,8-14,6							430-	470=2,0		
1400	0 - 1,5							600	0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1150	109,0-111,0 (107,0-113,0)	500	600	95,0 - 100,0 (93,0 - 102,0)	100	110,0-130,0
					300	14,0 -20,0

./.

Checking values in brackets

1.78

K9

K9

B. Governor Settings

187R with 811(2)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,8-14,6	650	14,2	9,2	1195-1210	300	7,5	100	min.9,0		
				4,0	1235-1265			300	7,4-7,6		
1170	13,8-14,6							405-445=2,0			
1400	0 - 1,5							600	0 - 1		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel mm / cm^3/1000 strokes
1	2	3	4	5	6	7
1150	94,0 - 96,0 (92,0 - 98,0)	500	600	76,0 - 81,0 (74,0 - 83,0)	100	110,0 - 130,0
					300	18,0 - 24,0

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	Control rod travel mm / cm^3/1000 strokes
1	2	3	4	5	6	7

Checking values in brackets

K10

En

K10

PE 6 P 120 A 320 LS 3815 RQ 300/1150 PA 546

supersedes -
company: Daimler-Benz
engine: OM 421 A
184,0 kW (250PS)

6 - 3 - 5 - 2 - 4 - 1
0 -45 -120-165-240-285 ± 0,5° (± 0,75°)
Values only applx to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 6 x 1,5 x 1000 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,2 - 15,6	0,5(0,9)			
300	4,4-4,6	0,1 - 0,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④ Control rod travel		Idle speed regulation Setting point		Test specifications ⑤ Control rod travel		Torque control ③ Control rod travel	
rev/min 1	mm 2	rev/min 3	mm 4	mm 5	rev/min 6	rev/min 7	mm 8	rev/min 9	mm 10	rev/min 11	mm 12
600	19,2-20,8	600	20,0	9,5 4,0	1190-1205 1225-1260	300	4,5	100 300 340-380	mind.6,0 4,4-4,6 =2,0	1150 600 900	10,5-10,6 11,0-11,1 10,6-10,7

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1190-1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA= 1150	0,7 bar 152,0-156,0 (149,0-159,0)	-	LDA= 900 600 LDA= 500	0,7 bar 160,0-166,0 (157,0-169,0) 158,0-164,0 (155,0-167,0) 0 bar 132,0-136,0 (129,0-139,0)	100	130,0-150,0

Checking values in brackets

3.81

K11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure MB 11,0 f

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
LS 3815 + ..PA 546	0,7 bar	0,47 0,4 0	11,0 - 11,1 10,8 - 10,9 10,3 - 10,4 10,1 - 10,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K12

Testoil-ISO 4113

En

K12

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 12,8 a
3. Edition
En

PE 8 P 100/520/5 LS802 RQ 300/1275 PA100DR
PE 8 P 100 A 320 LS807 PA100DR
PE 8 P 100 A 320 LS807 RQ 300/1250 PA189DR
8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 ±0,5
0 -45 -90-135-180-225-270-315° (± 0,75)

supersedes 5.74
company: Daimler-Benz
engine: OM 402
188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) Cyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,1 - 8,8	0,4			
600	9	2,7 - 3,7				
600	12	6,3 - 7,5				
600	15	10,9 -12,4				
200	9	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

100 DR

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1270	15,6-16,0	570	0	150	6,8-8,1	-	-
				1300	11,0-15,0			250	5,1-7,2		
				1340	0 -10,0			350	2,3-5,7		
				1410	0			470	0		

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: At 1290-1310 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes mm 7
1250	95,0 -97,0	600	600	75,0 - 80,0	100	140 - 160
	93,0 -99,0			73,0 - 82,0		

Checking values in brackets

1..78

K13

KA3

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1270 1300 1330 1380	15,6-16,0 7,2-13,5 0 - 9 0	550	0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,3 0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1290-1310 mm-1

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	95,0 - 97,0 93,0 - 99,0	600	600	75,0 - 80,0 73,0 - 82,0	100	140 - 160

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

K14

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 BOS 12,3 c 2
2. Edition
En

PE 6 P 120 A 821 LS 139 RQ 300/1050 PA 519
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 3.80
company: Büssing
engine: D 3256 BTXUE
213 kW (290PS)

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,4-12	21,6 - 22,0	0,5(0,8)			
300	6,4-6,6	1,7 - 2,3	0,4(0,7)			
600/500/1050		C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16.0	11,4	1095-1110	300	6,5	100	min.8,0	1050	12,4-12,5
				4,0	1150-1180			300	6,4-6,6	850	12,6-12,8
1350	0 - 1,0							380-420	=2,0	790	12,9-13,0
								°		600	13,1-13,2

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA	0,9 bar		LDA	0,9 bar		
1050	216,0-220,0 (213,0-223,0)		600	173,0-178,0 (170,0-181,0)	100	180,0-200,0
			LDA 500	0 bar 113,0-117,0 (110,0-120,0)		

Checking values in brackets

8.80

K15

KAS

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

BOS 12,3 c 2

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
139 with 519	0,9 bar		13,1 - 13,2
		0,305	12,4 - 12,5
		0,225	11,0 - 11,2
		0	10,6 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K16

Testoil-ISO 4113

En

K16

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4
4. Edition

En

PE 6 P 110/321 RS 157 RQ 250/1100 PA113R
..A..
S nozzles and fuel lines 6 x 1,5 x 600!

supersedes 8.73
company: S t e y r (vorm. Östr. Saurer)
engine: 5 FA
184kW (250 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,5 - 18,1	0,6			
600	6 12	2,2 - 3,2 16,1 - 17,3				
200	6	0,4 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1100 1150 1200 1260 1350	15,7-16,0 11,5-14,8 6,0-11,6 0 - 7,3 0	520	0	100 200 300 420	6,7-8,1 5,2-7,3 2,5-4,8 0	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1080	0,7 bar 126,0-128,0		LDA 1080	0 bar 104,0-106,0	100	170,0

Checking values in brackets

1.78

K17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1) .
157 with 113R	0,17	0,37	ca. 1,0 mm

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 L 7
1. Edition
En

Testoil-ISO 4113

PES 6 P 110 A 720 LS 360 Z RQ 300/1100 PA 335

supersedes
company MAN
engine: D 2566 MLUM/US
227 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) 3,00-3,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4	16,1 - 16,3				
	+ 0,1					
300	7,3-7,5	1,7 - 2,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
				11,4	1145-1160	300	7,4	100	min. 8,9	1100	12,4-12,5
				4,0	1200-1230			300	7,3-7,5	1000	12,5-12,8
1350	0 - 1,0									850	12,9-13,1
										700	13,3-13,4

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	0,9 bar		LDA	0,9 bar		
1100	161,0-163,0	1145 - 1160*	750	174,0 - 178,0	100	215,0 - 235,0
			LDA	0,3 bar		
			600	146,0 - 149,0		
			LDA	0 bar		
			500	120,0 - 122,0	100-220	(80-240)

Checking values in brackets

8.81

K19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel mm (1)
LS 360Z RQ .. PA 335	0,9		13,3 - 13,4
		0,42	12,7 - 12,8
		0,25	11,4 - 11,7
		0	10,9 - 11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K20

K20

En

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAF 11,6 h
3. Edition
En

PE 6 P 100 A 330 RS 304

RQ 225/1100 PA 284/1 DR
RQ 225/1000 PA 291/1 DR ./.

supersedes 10.75
company: D A F
engine: DKL 1150

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 + 0,1 (+ 0,15 / - 0,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,4 - 12,9	0,5			
600	9	5,2 - 6,2				
	12	11,4 - 12,8				
	15	17,3 - 18,5				
.	9	3,4 - 4,4				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ..284 / 1 DR

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,6-16,4	500	16,0	1140	14,3-14,6	460	0	150	7,2-8,1	780	15,6-16,0
				1170	5,0-12,5			250	3,9-6,0	900	15,2-15,5
				1190	0 - 8,5			320	0 -2,6	1020	14,6-14,8
				1240	0 - 1			360	0		

Torque-control travel on flyweight assembly dimension a = 0,45 mm

Speed regulation: At 1150-1165 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
1050	105,5-107,5 (102,5-110,5)	600	600	113,0-117,0 (110,0-117,0)		

./.

Checking values in brackets

2.77

K21

K21

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
500	15,7-16,3	500	16,0	1030 1050 1080 1130	14,8-15,2 9,0-14,0 0 - 8,8 0 - 1	430	0	100 200 300	6,6-8,1 4,1-6,3 0 -1,8	780 880	15,8-16,0 14,9-15,2

Torque-control travel on flyweight assembly dimension a = 0,25 mm Speed regulation At 1050-1055 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1000	112,0-114,0 (109,0-117,0)	600	600	118,0-122,0 (115,0-125,0)		

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

En Checking values in brackets

K22

1122

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MB 16,0 d
3. Edition
En

PE 10 P 100 A 320 LS 811

RQ 750 PA 248 R (1)
RQ 900 PA 248 R (2)
RQ 1100 PA 248 R (3)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 $(^{+0,5}_{-0,75})$
0 -45-72-117-144-189-216-261-288-333-360°

supersedes 6.75
company: Daimler-Benz
engine: OM 403
(1 - 180/198 PS)
(2 - 213(234 PS)
(3 - 250/275 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,4 + 0,1 mm (from BDC) Cyl. 10 $(^{+0,1}_{-0,75})$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	with governors-1100			with governors- 900+750		
1000	12	11,7 - 12,4	0,4	600=9	5,4 - 6,1	
200	9	3,5 - 4,5		200=9	3,5 - 4,5	

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQ 750..(1)

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
Control lever ca.24° Sleeve position	36,0 mm			700	13 - 16	-	-	-	-	-	-
				750	10,2						
				780	6,2-8,2						
				820	0,5-4,5						
				870	0						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
(1)						
730	80,0-82,0 (78,0-84,0)				100	ca.12
760-	770= 1mm RW less					
785-	800= 5,4mm RW, dispersion max. 6					

Checking values in brackets

4.76

K23

K23

B. Governor Settings

Checking of slider PRG check ① rev/min	Control rod travel mm	Full-load speed regulation Setting point rev/min	Control rod travel mm	Test specifications ④ Control rod travel mm	rev/min	Idle speed regulation Setting point rev/min	Control rod travel mm	Test specifications ⑤ rev/min	Control rod travel mm	Torque control ③ rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
*	Control lever ca. 32°			850 900 950 990	13,3-16,0 9,2 0,5- 4,6 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min	cm³/-1000 strokes	Control rod stop ③a rev/min	Fuel delivery characteristics ③b rev/min	cm³/-1000 strokes	Starting fuel delivery Idle speed ⑥ rev/min	Control rod travel cm³/1000 strokes / mm
1	2	3	4	5	6	7
(2) 880	78,0 - 80,0 (76,0 - 82,0)				100	ca.12
915 - 925: 1 mm RW ** less 950 - 965: 5,1mmRW - *** dispersion max. 6						

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 1100 .. (3)

Checking of slider PRG check ① rev/min	Control rod travel mm	Full-load speed regulation Setting point rev/min	Control rod travel mm	Test specifications ④ Control rod travel mm	rev/min	Idle speed regulation Setting point rev/min	Control rod travel mm	Test specifications ⑤ rev/min	Control rod travel mm	Torque control ③ rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
*	Sleeve position 36,0 mm			1050 1100 1150 1240	14,0-16,0 10,1 4,5-7,3 0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F) rev/min	cm³/-1000 strokes	Control rod stop ③a rev/min	Fuel delivery characteristics ③b rev/min	cm³/-1000 strokes	Starting fuel delivery Idle speed ⑥ rev/min	Control rod travel cm³/1000 strokes / mm
1	2	3	4	5	6	7
(3) 1080	86,0 - 88,0 (84,0 - 90,0)				100	ca.12
1100 - 1110 : 1 mm RW ** 1145 - 1160: 4,2 mm RW - ***						

Checking values in brackets

K24

K24

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 BOS 12,3 i
2. Edition
En

PE 6 P 120 A 721 RS 217 RQ 250/1100 PA 311 DR

1 - 5 - 3 - 6 - 2 - 4 je 60°
Testing with T nozzles and fuel lines 8 x 2 x 1000!

supersedes 10.75
company: MAN
engine: D3256 BTYE
223 kW (303PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) 2,80-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9	23,1 - 23,6	0,5(0,9)			
250	+0,1 5,9-6,1	1,7 - 2,3	0,8(1,2)			
800/500	- - -	C, 'col.4-5				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12 +0,1
600	15,6-16,4	600	16,0	10,9	1145-1160	250	6,0	100	min.7,5	1100	11,9
				4,0	1190-1220			250	5,9-6,1	980	12,1
										905	12,7
1350	0-1							345-	385=2,0	800	13,0

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
LDA 1100	1 bar 231,0-236,0 (228,0-239,0)		LDA 800	1 bar 218,0-224,0 (215,0-227,0)	100	195,0-210,0
			LDA 500	0 bar 113,0-119,0 (110,0-122,0)		

Checking values in brackets

L5

8.80

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min decreasing / increasing pressure – in bar gauge pressure

BOS 12,3 i

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
217 with 311 DR	1,0 bar	0,45 0,28 0	13,0 - 13,1 12,3 - 12,4 10,3 - 10,6 9,6 - 9,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 12,8 b
4. Edition
En

PE 8 P 100 A 320 LS 810, Z RQ 300/1250 PA 187R
LS 810 RQ 300/1250 PA189DR
LS 810 RQ 300/1250 PA329/2R
8 - 7- 2 - 6 - 3 - 5 - 4 - 1 + 0,50
0 -45 - 90-135-180-225-270-315° ±0,75

supersedes 9,75
company: Daimler-Benz
engine: OM 402

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,60 (3,35-3,55) mm (from BDC) Cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,7 - 12,4	0,4			
600	9	5,0 - 6,2				
600	15	15,3 - 17,0				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

PA187 R

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	600	16,0	1270	15,6-16,0	550	0	200	6,9-8,1		
				1300	7,6-13,0			300	4,2-6,5		
				1330	0 - 9,2			400	0 -2,4		
				1380	0			450	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1290-1310= 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
1250	102,0-104,0	600	600	80,0 - 85,0	100	11,0-13,0
"Z"	100,0-106,0			78,0 - 87,0		
1250	88,0- 90,0	600	600	66,5 - 71,5		
	86,0- 92,0			64,5 - 73,5		

./.

Checking values in brackets

1.78

L7

B. Governor Settings

PA189DR

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1270 1300 1330 1380	15,6-16,0 7,2-13,5 0 - 9 0	550	0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,3 0		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1290-1310

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	94,0 - 96,0 92,0 - 98,0	600	600	74,5 - 79,5 72,5 - 81,5	100	14,0 - 16,0

Checking values in brackets

Testoil-ISO 4113

PA329/2R

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1270 1300 1330 1380	15,6-16,0 7,5-13,0 0 - 9,2 0	550	0	200 300 400 450	6,9-8,1 4,2-6,5 0 -2,4 0	-	-

Torque-control travel on flyweight assembly dimension a - mm

Speed regulation At 1290-1310=

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104 F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	102,0-104,0	600	600	80,0-85,0	100	11,0 - 13,0

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
3. Edition
En

PES 6 P 120 A 420 RS 238 RQ 300/1100 PA 193 DR
RQV250-1100 PA 194 DR

Testing with T nozzles and fuel lines 8 x 2 x 1000!
1 - 4 - 2 - 6 - 3 - 5 je 60°

supersedes 1.73,2.74
company: Saurer
engine: D 2 KT (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,8 + 0,1 mm (from BDC) Cyl. 1 (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	24,9 - 25,6	1,0			
600	6	5,9 - 7,1				
	12	20,8 - 22,6				
200	15	30,6 - 33,0				
	6	3,7 - 4,7				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ..PA 913 D

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	15,7-16,3	650	16,0	1120	14,6-15,0	610	0	100	7,1-8,1	750	15,8-16,0
				1160	8,0-13,6			250	5,3-7,4	1050	14,8-15,1
				1200	0 - 8,8			350	3,2-5,4		
				1270	0			510	0		

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA	0,7 bar		LDA	0,7 bar	100	21 - 23
1100	206,0-208,0		700	178,0-182,0		Change-over point 200-130 U/min
	0 bar = 2,0 + 0,1 mm RW less					

./.

Checking values in brackets

10.75

L11

L11A

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1100	15,0-18,0		-	-	-	ca.12	180	6,4-8,0	1100	8,2
	1150	11,0-15,0						250	3,7-6,1		
	1200	6,6-11,8						350	1,9-3,3	-	-
	1280	0 - 6,2						490	0		
	1360	0					(3a)				

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	LDA 0,7 bar	LDA	0,7 bar	100	21 - 23		
1100	206,0-208,0	1130	700	178,0-182,0	Change-over point 200-130 U/min			
	0 bar = 2,0	+ 0,1 mm RW	less					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation (2b) intermediate speed (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

L12

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
1. Edition

En

PES 8 P 100 A 921/5 RS 252 RQV 300-1300 PA 205 KR,
.. 920/5 RS 252/34 223 K, 225 K
Test equipment as per VDT-WPP 110/2 3. Edition
Cam sequence and angular cam spacing.
1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je 45°

supersedes -
company: IHC - USA
engine: DVT 800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) + 0,15 / - 0,05

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,3 - 12,0				
600	15	16,1 - 17,8				
200	6	2,9 - 3,9				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.66	1310 1400 1500 1640	14,8-17,4 9,2-13,4 1,7- 8,2 0	-	-	-	ca.10 (3a)	100 300 500 630	6,6-8,0 3,4-5,6 1,4-2,7 0	250 500 800 1310 1520-	0,6-2,6 2,6-3,2 4,6-5,0 8,2 1640 end(11)

Torque control travel a = mm** Section C, col. 8!

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
** See page 2!								

Checking values in brackets

* 1 mm less control rod travel than col 2

6.75

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L13

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Test oil temp 40°C (104°F)		Rotational-speed limitation RQV Control-rod stop RQ	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes
1	2	3	4	5	6	7

Ppe 252 ** 205 KR:

LDA	0,85 bar		LDA	0,85			
1300	86,5-88,5	1340-1350*	900	95,5-99,5	100	190-230	1300 ca. 10,5
			400	67,5-71,5	300	8- 11	900 ca. 10,3
			LDA	0 bar	***		
			400	40,5-46,5	170-240 U/min		400 ca. 9,2

Ppe 252 ** 223 KR:

LDA	0,85		LDA	0,85			
1300	75,0-77,0	1340-1350*	900	91,0-95,0	100	190-230	1300 ca. 9,4
			700	76,0-80,0	300	8- 11	900 ca. 10,0
			LDA	0 bar	***		
			400	35,0-41,0	170 -240 U/min		700 ca. 9,4

Ppe 252 ** 224 KR:

LDA	0,85		LDA	0.85 bar			
1300	71,0-73,0	1340-1350*	800	103,0-107,0	100	190-230	1300 ca. 9,0
			600	81,5-85,5	300	8- 11	900 ca. 10,8
			LDA	0 bar	***		
			400	38,5-44,5	170-240 U/min		600 ca. 10,1

Ppe 252 ** 225 KR:

LDA	0,85		LDA	0,85 bar			
1300	93,5-95,5	1340-1350*	900	96,5-100,5	100	190-230	1300 ca. 11,1
			700	81,5- 85,5	300	8- 11	900 ca. 10,4
			LDA	0 bar	***		
			400	35,0-41,0	170-240 U/min		700 ca. 9,8

** with

*** Change-over point

L14

En

L14

PE 6 P 110 A 320 RS 281, Z — RQ 250/1100 PA 196 R
RS 281 — EP/RSV 250-2200 P5/11R
RS 281, Z — EP/RSV 250-1100 P5/390 R

supersedes: 4.75
company: DAF
engine: DKT 1160 (290 PS)
-Z- DKTD1160 (260 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 (+ 0,15 / - 0,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,2 - 13,9	0,6			
600	9	6,4 - 7,6				
600	15	19,0 - 20,9				
200	9	4,8 - 6,0				

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

RQ 250/1100 PA 196 R

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
660	15,7-16,3	660	16,0	1120	15,6-16,0	670	0	150	6,5-8,1	-	-
				1160	9,0-14,0			300	4,8-6,8		
				1220	0 - 7,0			450	1,2-3,7		
				1280	0 - 1			570	0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
281-850	LDA 0,7 bar 140,5-143,5 (138,5-145,5)		LDA	0 bar		
			600	126,5-129,5 (124,5-131,5)		
281Z-	LDA 0,7 bar 135,5-138,5 (133,5-140,5)		600	126,5-129,5 (124,5-131,5)		

./.

Checking values in brackets

2.77

L15

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min (1)	mm
1	2	3		4	5	6		7	8	9		10	11
ca.50	1100 1160 1230 1200 1250 1340	16,0 11,4 4,8 5,8-9,0 1,4-5,0 0,3-1,0		without auxiliary spring with auxiliary spring				ca.20 (3a)	250 150 250 320 460	6,8 19-21 6,5-7,1 3,6-5,2 0 - 1		800 430	0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Pe ca. 10 mm RW	281 **	P5/11R:						
Pe Full load see page	281, Z **	P5/390R: 1! 1145-1155*					250	→ 390R: 6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

** with governors

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution mm
281 / 196R	0,39 - 0,42	0,12 - 0,18	-0,1 -1,0
281Z / 196R,390R	0,34 - 0,36	0,12 - 0,18	-0,1 -1,0

En

850 min^{-1} + pü = 0,7 bar

L16

Testoil-ISO 4113

LA6

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 16,0 h
1. Edition

En

PE 10 P 100 A 320 LS811 RQV 300-1250 PA 390/2R (1)
RQ 900 PA 310R

supersedes
company:
engine:

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 + 0,50
0 -45 -72 -117-144-189-216-261-288-333° (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Cyl. 10

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,1	9,8 - 10,0	0,3(0,6)	11,4	9,6 - 9,8	n = 850 min⁻¹
	+0,1			+0,1		
300	6,9-7,1	0,9 - 1,3	0,3(0,5)	7,4-7,6	1,7 - 2,3	
600		C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV..390/2R (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1250 1450	15,2-17,8 0 - 1	-	-	-	ca.13	100 300 620-680 700	min.9,8 6,9-7,1 = 2,0 0 - 1	400 800 1250	2,1-3,0 4,4-5,0 8,2
ca.64	9,1 4,5	1290-1300 1335-1365				(3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	98,0-100,0 (96,0-102,0)	1290-1300*	600	76,0-81,0 (74,0-83,0)	100 300	110,0-130,0 10,0- 14,0		

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Checking values in brackets

* 1 mm less control rod travel than col. 2

10.77

Testoil-ISO 4113

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BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.32	10,4	915-920		-	-	-		-	-	-		900	5,6
	4,8	940-950											
	1000	0 - 1											
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	96,0 - 98,0 (94,0 -100,0)	915 - 920*			100	16 - 17mmRW		
					300	18 - 24		
					945	4,7-4,9mmRW		
						dispersion max.4(6)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution / difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

L18

Test Specifications Fuel Injection Pumps ② and Governors

40

UPP 001/4 DAF 11,6 a
4. Edition

En

PE 6 P 110 A 320 RS280 RQ 250/1100 PA24R
EP/RSV 200-1100 P1/10R ./.
EP/RSV 250-1100 P1/391R ./.

supersedes 6.76
company: van Doorne
engine: DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	15,1 - 15,9	0,6			
600	9	8,4 - 9,6				
	15	21,0 - 22,9				
200	9	6,8 - 8,0				

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil ISO 4113

B. Governor Settings

RQ ... 24 R

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
500	15,7-16,3	500	16,0	1120	15,6-16,0	540	0	100	6,7-8,1	-	-
				1150	9,2-14,0			200	5,0-7,1		
				1180	0 - 9,8			300	2,4-4,6		
				1240	0 - 1			440	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
850	117,5 - 120,5					
	115,5 - 122,5					

Checking values in brackets

8.76

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

L19

L19

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.68	1100 1180 1220	16,0 10,2 6,0	without auxiliary spring	ca.29	200	6,0		
	1200 1240 1310	5,6 - 9,6 2,0 - 5,6 0,3 - 1	with auxiliary spring		100 200 300 400	19 - 21 5,7-6,3 1,8-3,8 0 - 1	350 200	0 0,3-0,5
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
850	117,5 - 120,5	1140-1150*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV... 391R

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.68	1100 1180 1220	16,0 10,2 6,0	without auxiliary spring	ca.30	250	6,0		
	1200 1240 1310	5,6-9,6 2,0-5,6 0,3-1,0	with auxiliary spring		100 250 350 460	19 - 21 5,7-6,3 1,7-3,7 0 - 1	350 200	0 0,3-0,5
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
850	117,5-120,5 115,5-122,5	1140-1150*						

Checking values in brackets

* 1 mm less control rod travel than col. 2

L20

En

L20

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 g
5. Edition
En

PE 6 P 120 A 320 RS 285 RQ 250/1100PA 196 R
EP/RSV 250-1100 P 5/11 R
EP/RSV 250-1100 P 5/390 R

supersedes 2.77
company: D A F
engine: DKS 1160

Testing with T nozzles and fuel lines 8 x 2 x 1000!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC) (+ 0,15 / - 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	22,5 - 23,2	0,9			
600	9	10,6 - 12,0				
	15	27,3 - 29,8				
200	9	7,4 - 8,6				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

196DR

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,7-16,3	660	16,0	1120	15,6-16,0	670	0	150	6,5-8,1	-	-
				1160	9,0-14,0			300	4,8-6,8		
				1220	0 - 7,0			450	1,2-3,7		
				1280	0 - 1			570	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes/ mm 7
LDA 850	0,7 bar 191,5-195,5 (189,5-198,5)		LDA 600	0 bar 133,5 - 137,5 (130,5 - 140,5)	100	ca.32

Checking values in brackets

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4.77

Testoil-ISO 4113

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B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.50	1100 1160 1230	16,0 11,4 4,8	without auxiliary spring			ca.20	250	6,8	800	0
							150 250 320 460	19 - 21 6,5-7,1 3,6-5,2 0 - 1	430	1,2-1,8
(2a)	1200 1250 1340	5,8-9,0 1,4-5,0 0,3-1,0	with auxiliary spring							

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ...) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Pump 285 with 5/1 R: 10mm CRT or full-load delivery stated on governor plate!								
Pump 285 with 5/390R: as RQ governor		Page 1 however-1135-1145* at 0.7 bar						

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
285 with 196 DR) 285 with 390 R)	0,39 - 0,41	0,10 - 0,17	- 0,1 - 1,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

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